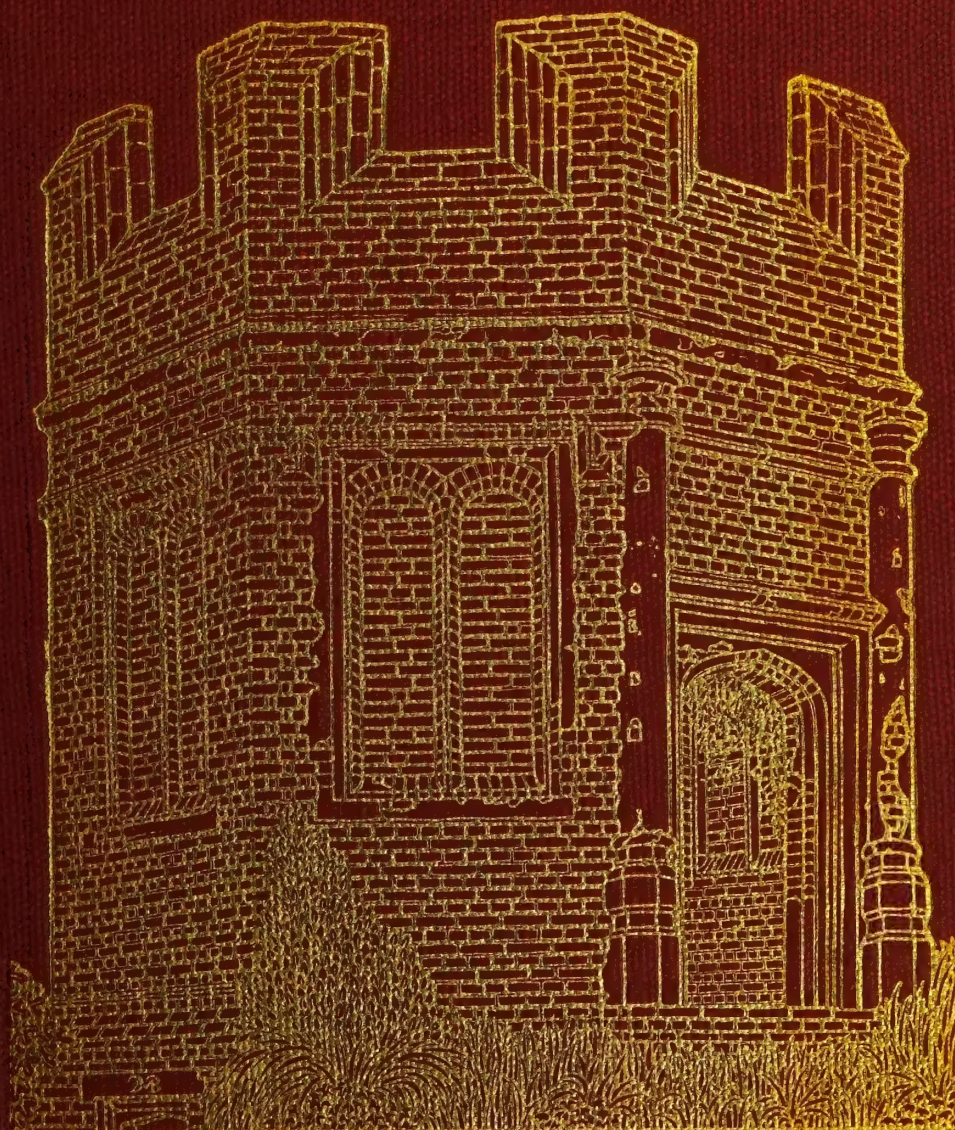


A HISTORY
of
ENGLISH BRICKWORK



Nathaniel Lloyd

A History of English Brickwork

A History *of* English Brickwork

*With Examples and Notes of the Architectural
Use and Manipulation of Brick from
Mediæval Times to the end of
the Georgian Period*

By
NATHANIEL LLOYD

*(Officer of the Most Excellent Order of the British Empire)
(Fellow of the Society of Antiquaries)*

Author of "Aspects of Houses in Relation to Wind, Rainfall and Sunshine,"
"Garden Craftsmanship in Yew and Box," etc.

*With an
Introduction by*
SIR EDWIN L. LUTYENS, R.A.

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Introduction

THIS is a book that all who appreciate Bricks and Brick Building, and all Architectural Students, both young and old, who yet have aspirations to improve, should possess, read and digest.

Mr. Lloyd has done real service to a great English Tradition, and I earnestly hope that English Architects and Builders will take heed and benefit so that our England will become yet more beautiful, and the prevailing methods that so mar our Country will cease ; and that the influence of this book will once more help to produce those beauties that were ours in times—alas—gone by.

EDWIN L. LUTYENS.

Preface

THERE are probably more buildings in England constructed of brick than of any other material. Amongst these are some of the most interesting, the most picturesque and the most serviceable structures that we have in any material.

Attempt has been made to illustrate all types, including buildings which are well known, but which are so important as to demand admission. The majority, however, of the buildings and details have not appeared in any book, and I have taken almost all the photographs specially for this volume.¹

It is important that the general public should have some knowledge of the possibilities of brick architecture, for with them rests the decision what domestic buildings shall be built and of what materials. Few persons are so uninfluential as not to be capable of expressing views which carry some weight. Should such views be based upon real knowledge of the subject, the greater will be their effect.

There is another aspect in which this History should appeal to the man in the street. A mere perusal of its illustrations is calculated to open eyes to appreciation of buildings in villages and country towns at which they may previously have gazed, but certainly had not seen. The added interest to life, which even such slight acquaintance with architecture confers, can scarcely be over-estimated. Illustrations have been arranged chronologically rather than in types ; by this means diversity of forms in the same periods is best displayed. Every good brick building could not possibly be included, but it is believed that every important type is represented by at least one example.

The claims of Architects have not been overlooked, and it is hoped the photographic details and drawings may be found serviceable. While in the South of England good brick buildings are now being designed and built, there are other districts where the potentialities of brick are ignored, and where its use is confined to the most utilitarian purposes. Such neglect

¹ A share in the credit for such merits as the photographs may possess should be given to Mr. A. E. Walsham, whose instruction in the art of architectural photography (given ten years ago), has enabled me to avoid many pitfalls into which, but for his guidance, I must certainly have stumbled.

and degradation of the material, which Wren so highly esteemed, is lamentable, and must be prejudicial alike to designers and districts.

Typical details are given of doorways, windows, ornaments, etc., which are often self-explanatory, but below each are notes, which may often save necessity for reference to the text. Dates are given also. Where these are upon the actual building, or are elsewhere recorded, they possess great interest and value. Others, which are only approximate, are based upon similar works elsewhere, the dates of which are known, but, as styles and details persisted in some localities long after they had been superseded in others, it may well happen that some of these may require correction in the light of further knowledge. It was thought, however, that an approximate date was better than none.

In conclusion, I wish to express my sincere thanks to the owners of buildings illustrated, who allowed me to examine and to photograph them, and for the very great kindness and courtesy which I invariably received. The measured drawings bear the names of the draughtsmen, all of whom have shown much interest and taken pains correctly to record measurements and mouldings. My thanks are particularly due to Mr. C. S. White, A.R.I.B.A., who made it a labour of love to measure up Willmer House, Farnham, all the details of which he recorded, not by guesswork from the ground, as is so often done, but by actual handling from ladders. The drawings of Cromwell House, Highgate, by Mr. L. Keir Hett, F.R.I.B.A., are also from measurements taken (in the same way) specially for this book, and should be particularly interesting to designers and brickmakers. Mrs. Buckmaster's beautifully finished and conscientious drawings (often made from somewhat scanty material) speak for themselves. I wish also to express my grateful thanks to Captain C. W. Firebrace for help in research work, to Mr. Charles M. C. Armstrong, F.R.I.B.A., for the detail drawings of the gateway at Chesterton, and to Mr. Charles McLachlan, F.R.I.B.A., for lending me his thesis on "The Architects of the Renaissance in England and their Materials"; to Mr. Arthur T. Bolton, F.R.I.B.A., for the drawings of chimneys at Compton Wynyates; to Mr. Algar Howard for the photograph of his fine chimney at Thornbury Castle, taken some years ago, when scaffolding was up for repair work; and to Mr. V. A. Malcolmson for photographs of those at Aston Bury. I also wish to thank Dr. Philip Laver, F.S.A., for information regarding Roman and early mediaeval brickwork, and

Mr. L. F. Salzman, F.S.A., for directing my attention to early illustrations of brickmaking which would not have been traced but for his profound knowledge of mediaeval literature.

To Mr. H. Greville Montgomery, Hon. A.R.I.B.A., I am also much indebted for the interest he has shown and for the assistance afforded in arranging the production of this volume to exhibit to the greatest advantage the materials I have gathered. I do not think any author or any book can have been more fortunate in a publisher.

I have taken some pains to acknowledge quotations, and to verify references, the result of the latter being to enable me to correct errors which have been copied and recopied for over 150 years.

The tables of measurements, of prices and the details of methods of manufacture in the past may provide answers to questions which are frequently asked by those interested in the history of the industries of their predecessors.

NATHANIEL LLOYD.

Preface to Second Issue

IT is satisfactory to record that since this book was first published in December, 1925, no error has been pointed out which required correction, except the transposing of two illustrations on pages 301-2, (for which correction slips were immediately provided), and which is now amended.

I take this opportunity of gratefully expressing my thanks to all reviewers who have so ably and kindly reviewed this History. The expression of their appreciation and the recent demands from overseas have brought forth this new issue. I do not think anything can so richly reward an author for his labours as such a "call," to which, accordingly, I make my grateful bow.

NATHANIEL LLOYD.

GREAT DIXTER,
NORTHAM,
SUSSEX,
1928.

A History of English Brickwork

THE origin of brick in England is buried in the mists of antiquity. The Romans are supposed to have introduced it, but it is certain that Roman or Continental influence prevailed here long before the Roman occupation. The practice of baking clay for other purposes than for pottery (a very ancient art) was current in early ages. Baked clay spoons were made in Sussex¹ a thousand years before Cæsar landed. Brick loom-weights (in a variety of shapes and sizes) have been found amongst Celtic remains, of earlier date than 100 B.C. Some of these are pyramidal in shape, others are like triangular tile-bricks $1\frac{1}{2}$ inches thick, having rounded angles and perforated to receive the cord. They are certainly burnt brick, though not burnt very hard ; in that respect they differ materially from the well burnt Roman tile-brick.

“In a late Celtic tumulus at Hale Magna, Lincolnshire, a hand brick was found (viz., a cylindrical mass of clay bearing evidence of having been clenched in the left hand before baking). With it yellow, purple and pale red bricks ($3\frac{1}{2}$ by 3 by 5 ins., $3\frac{1}{2}$ by $1\frac{1}{2}$ ins., $3\frac{1}{2}$ by $1\frac{3}{4}$ ins.) were also found. Apparently these had been moulded for the construction of a rude dome over a funeral deposit.”²

Of Roman wall-bricks there is an infinite number of examples in this country. They vary greatly in size—some being square, but 18 by 12 by $1\frac{1}{2}$ inches is a common size, and while 1 inch thickness is general, bricks up to and even exceeding $3\frac{1}{2}$ inches in thickness are not uncommon. Some re-used in the Saxon tower of Trinity Church, Colchester (p. 255), are this thickness. Roman brickwork was built with thick mortar joints ($\frac{3}{4}$ inch, 1 inch or more), and the bricks were hard and well burnt. Roman ruins have ever been sources from which materials have been obtained for later buildings. Colchester Castle (p. 101) shows lacing courses of re-used Roman bricks, binding the flint walling just as used by the Romans in the Roman wall (p. 357) close by. St. Botolph's Priory Church, c. 1100 (p. 102), shows extensive use of Roman brick structurally, both in the interior and at the West end. Apparently the surfaces were plastered

¹ “Neolithic Spoons,” by J. E. Couchman, F.S.A. Trans. Sussex Archæological Society, Vol. LXI., 1920.

² “Archæological Journal,” XVII., p. 63, 1860.

over, including the intersecting arcading and the unmoulded orders of the doorways between the moulded stonework.

St. Albans Cathedral, c. 1100 (p. 103), in the centre portion of which Roman bricks from the city of Verulamium were used, is an excellent example of good effect produced by use of thin bricks built with thick joints on a large scale.¹

In the "Dictionary of Architecture"² comparison is made between Roman and modern Italian bricks, and it is stated that

"The burnt bricks of the Romans, as may be seen by inspecting any of their works, are exactly like those of the present day in Italy, which latter are in fact tiles made of clay, beaten flat, dried on the ground, stacked edgeway in kilns and burnt by the flame of wood."

It is obvious that bricks so made would vary greatly in all dimensions as, in fact, Roman bricks do.

Following the collapse of the Western Roman Empire (and of civilisation) in the fifth century, together with the removal of Roman influence from Britain, was the period known as the Dark Ages ; a period when arts, crafts and industries languished. The Saxons, who occupied England during a great part of this period, were a pastoral people, who erected few buildings of a permanent character. Timber and thatch (materials which lay ready at hand) were more to their liking than brick and tile, which required preparation and time for manufacture. Where more permanent materials were required, bricks were taken from ruined Roman buildings, but no indications exist showing that the Saxons made either bricks or tiles. Saxon references to tegulae must not be assumed to refer to burnt tiles ; the term was applied to thin stones. In Aelfric's Vocabulary of the Tenth Century, tegulae, the mediaeval Latin word for roof-tiles, is placed with varieties of stones, and translated "hroftigla" (roof-tiles), and the mediaeval Latin word "tessellae" (floor-tiles) as "lytle fetherscite florstanas," that is little four-cornered floor stones. (Wright and Wulcker, Vocabularies, s.v. tegulae and tessellas.)³ In all existing buildings of Saxon origin, where bricks have been employed, these appear to be Roman bricks re-used. There are many buildings prior to the twelfth century containing such bricks, and it would be difficult to point to bricks before that time which can be said to have had other than Roman origin.

¹ These walls were once plastered, however. ² "Dictionary of Architecture," Vol. I., p. 137, London, 1848.

³ "The Development of English Building Construction," by C. F. Innocent.

It should be remembered that the process of brick-making was a more lengthy one than it is now, on account of the time allowed for tempering the clay. We may dismiss Vitruvius' statement that "in Utica they allow no bricks to be used which are not five years old and approved by a magistrate" as referring to unburned, sun-baked brick, but we do know that up to comparatively recent times a period of many months was allowed for tempering the clay. In 1570, Palladio, referring specifically to *burnt* bricks, says that drying bricks under shelter "can't be accomplished in less than two years."¹ Whether such time was usually allowed for drying or not, it certainly was customary to dig clay in the autumn, turn once or more during the winter, and not mould into brick until spring, after which some considerable time was allowed to elapse before burning.² The unsettled state of the country during the Dark Ages was unfavourable to industries requiring time for manufacture of products, and existing remains support a view that building was carried out with materials lying ready to hand, such as timber, stone and remains of ruined buildings, which required little time for preparation. Permanent buildings erected for purposes of defence were wanted quickly. These circumstances were not favourable to the conduct of so slow a manufacturing process as brickmaking. There are no records of brickmaking and no remains of brick (other than what appear to be Roman) between Roman and Mediaeval times.

In the Abbey buildings at Little Coggeshall, in Essex (pp. 104-5), are bricks, which certainly are not Roman, used in the construction of the Abbey and of St. Nicholas Chapel, adjoining, c. 1200-1220. These are used for wallings, for quoins, window dressings and internal mouldings. Those used for the Chapel quoins measure 12 by 6 by $1\frac{3}{4}$ inches; those for the East window are $1\frac{1}{2}$ inches thick and fairly regular in size. The bricks are bright red in colour. In the flint rubble wallings are many pieces of brick and plain tile. The brickwork of this building is particularly interesting, because much of it is in its original condition and also on account of its mouldings.

In the Abbey buildings are two early examples of brickwork. In the sub-vault of the Dorter is a brick doorway, c. 1200 (p. 256), having

¹ "The Four Books of Andrea Palladio's Architecture," Book I., Chapter III.

² "Earth for tiles to be digged and cast up before November, turned in February and not wrought before March." See 17 Ed. IV. (1477) c. 4.

jambs and two centred arch of two moulded orders. The bricks are purpose-moulded, and several show the same imperfection of the mould.

There is a detached building (p. 104), three walls of which remain, built of flint rubble with a large proportion of brick. The windows (p. 283), which are entirely of brick, are lancet-shaped, with recessed jambs of two orders. Below these, inside, are recesses with pointed heads—all in brick. The bricks measure about 12 by $5\frac{1}{2}$ to 6 by $1\frac{3}{4}$ inches. The mediaeval brickwork of this Abbey is altogether different in character from the Flemish type of brick, shortly to be introduced.

A little further North, in the County of Suffolk, is Little Wenham Hall, c. 1260-80 (p. 107), which is probably the earliest brick dwelling-house of its kind in England. The bricks used are of the true Flemish or Low Country type, measuring 9 by $4\frac{1}{2}$ by 2 inches, some $2\frac{1}{4}$ inches thick. These vary in colour, most being cream and greenish-yellow, with occasional pinks and reds. They are rough in texture and warped. The bases of the walls are of stone and courses of roughly knapped flints. A few feet up the brick walling begins. It has been suggested that the bricks may have been imported from Flanders by way of Ipswich, but it is at least equally probable that they were made locally, for we have authentic record of regular brickmaking in England from a period shortly after this. These bricks were of a type new to this country, and it is significant that the development of the use of brick in England synchronised with the adoption of this shape. Flemish weavers settled on the Tweed, in Herefordshire, and South Wales early in the twelfth century. Refugees from the Low Countries settled in Norfolk at Worstead at the end of the thirteenth century—the name of this village is still connected with certain woollen products, the manufacture of which was introduced into England by these refugees. These were followed at frequent intervals during the succeeding 400 years by similar immigrants, and the influence they exercised upon local architecture at various periods is obvious in those buildings which have survived. They appear to have introduced the art of brickmaking just as they introduced other industries; indeed, it would be surprising had they not done so. It is true also that bricks were imported from Flanders, but records of these refer to small quantities, which bear no relation to the immense numbers required to build a mediaeval castle. When superintending the repairs to Tattershall Castle, built c. 1440, Mr. William Weir submitted some of the bricks

to the chemist of the Lincoln Brick Company for analysis and examination. The latter was quite definite on the point that the bricks could only have been made of Lincolnshire clay, on account of pebbles found in them, which he identified and which he believed were peculiar to the locality. It is, however, possible that quantities may have been brought as ballast; indeed, we know that small Dutch bricks were commonly imported from the fifteenth century and onwards. These, however, are quite distinctive in material and in make, whereas bricks of the type used at Little Wenham Hall do not differ from undoubted English-made bricks. Other examples of the use of such bricks is in the vaulting at Allington Castle, Kent, c. 1280, at Salmestone Grange, near Margate, and at St. Olave's Priory, near Yarmouth.

Such authorities as Bishop Lyttelton¹ and Professor Thorold Rogers² were of opinion that bricks were not made in England (after Roman times) until the fifteenth century. It is probable, however, that bricks were made here early in the thirteenth century, and it is certain they were made early in the fourteenth century. In the Pipe Rolls and Hull Ministers' and Chamberlain's accounts are records of the working of the Corporation Brickyards at Hull in the year 1303 and onwards.³

At Beverley, in 1391, Richard Hamondson and two others came before the twelve keepers of the town and took of them the soil of the land called Groval Dyke, at a rent of 3000 tiles, called Waltye,⁴ and in 1440 a rental of 1000 Waltye for the same purpose from Robert Collard, tilemaker, in the same locality is mentioned.⁵

Bricks, however, were being made at Beverley in 1344.⁶

Mr. John Bilson, F.S.A., and Mr. Arthur F. Leach, F.S.A., have published a quantity of information derived from Hull accounts and Beverley accounts, which have corrected and greatly increased our knowledge of early brickmaking and brickbuilding in England.⁷ We know that during the fourteenth century there was much brickbuilding in Hull. Leland, who died 1399, writing of Hull in the reign of Richard II. (1377-99), says :—

“And in his tyme the town was wonderfully augmented for building . . . walls all made of brike as most part of the houses of the Towne at that time was.”

¹ “The Antiquity of Brick Buildings in England in the time of the Romans.” “Archaeologia” I. Pub. 1757.

² “History of Agriculture and Prices.”

³ John Bilson, F.S.A., in “R.I.B.A. Journal” of 1908, p. 279.

⁴ Hist. MSS. Com., Beverley, MSS. 62.

⁵ *Ibid.* MSS. p. 128.

⁶ “The North Bar, Beverley,” by John Bilson, F.S.A. “The Building of Beverley Bar,” by Arthur F. Leach. Trans. “E. Riding Antiq. Soc.,” Vol. IV., p. 47, 1896.

⁷ *Ibid.*

In the North and South transepts of Holy Trinity Church, Hull, c. 1315-20, the brickwork is in English Bond, the bricks being : South transept, 9 by $4\frac{3}{8}$ by $2\frac{1}{16}$ inches ; North transept, $9\frac{3}{4}$ by $4\frac{3}{4}$ by $2\frac{1}{8}$ inches. In the chancel, c. 1340, the bricks are 10 by 5 by $2\frac{3}{16}$ inches. The filling-in of the vaulting of the nave of Beverley Minster (second quarter of the fourteenth century) is done with bricks measuring $10\frac{1}{2}$ by $5\frac{1}{4}$ by 2 inches, and the bricks in the North Bar, Beverley (1409-10), (p. 108) are the same size, the joints are $\frac{1}{2}$ inch thick and the bond is irregular. The only specially moulded bricks are the chamfered bricks, called "squynchons" in the accounts, used for the jambs, arches of openings and recesses. The voussoirs are cut from these chamfered bricks ; the labels are of unmoulded brick ; the apices of labels are of carved brick ; and the corbel table has a dentil course between two projecting courses of plain brick.¹

Reference has been made to the introduction of the Flemish type of brick by settlers in England from the Low Countries, but other influences popularised the use of brick here, especially in districts where stone was scarce. Of these two may be indicated, one of which was commercial, the other military, both being influences which have frequently determined architectural materials and styles.

The beginning of that association of North German and Low Country towns in what was known as the Hanseatic League cannot be traced. It already was a working force in the twelfth century. Originally an association of merchants dwelling together in a fortified place for mutual protection, it ultimately became a combination of great cities, exercising immense influence and power. In 1157, Henry II. granted important privileges to the Hanse of Cologne, facilitating their trading with London. In 1194, Richard I., when passing through Cologne, made further concessions, freeing these merchants of tolls and customs and extending liberty to trade at all fairs in the provinces. In 1250, London storehouses were erected. In 1259, Henry III. confirmed privileges already granted, but the merchants (in return for civic advantages) had to undertake certain civic duties, e.g. repairs to Bishopsgate. In 1448, there was a state of war between the League and England, which terminated in 1478, when the privileges of the League were restored.² A characteristic of many Low Country and North German towns included in the League was the use and

¹ "The North Bar, Beverley," John Bilson, F.S.A., whose are the above measurements.

² "R.I.B.A. Journal," 1894: "Influence of the Hanseatic League on Architecture," by J. Tavenor Perry.

remarkable development of brick as a building material. Its use was not confined to everyday purposes, but was extended to the construction of elaborate Gothic churches, for which it was moulded, cut and carved. A notable example is the East gable of the Church at Prenzlau, where rose window, arcading and tracery are all of brick. It was natural that brick should be used as the chief building material, for Flanders, Holland and Germany North of Frankfurt, Posen, etc., included a large area in which stone did not exist or was relatively scarce. The affiliation of towns in this area for commercial purposes led to interchange and adoption of the same architectural forms, resulting in an architectural character common to the whole of this great district. Hull was one of the most important Hanse towns in England, and it is there we find some of our earliest records of making and building with brick. Its use spread slowly, however, until well into the fifteenth century, when another influence caused brickmaking and building in brick to be carried out in localities widely apart. The Rev. J. Kestell Floyer developed the history of this connection between conquest and architecture some years ago,¹ when he drew attention to the effect of French architectural characteristics upon fifteenth century brick castles in England. The strongest evidences in support of this theory of French influence are the facts (i) that certain fifteenth century brick castles were built by English knights and peers, who had been engaged in wars against France, and had even established themselves in French castles for years, from which they organised raids and despoiled that country ; (ii) that what we term English bond, which was in use in France, became adopted generally in England in place of the irregular bond of early mediaeval work; and (iii) the introduction of diaper patterns on wall surfaces formed by flared headers of dark colour and partially vitrified.

He points out that Ralph, Lord Cromwell, who built Tattershall Castle, c. 1440 (pp. 109-10, 373-4), was in France through most of the reign of Henry V., and was present at the taking of Caen, Courtonne, Chambrays and other places in 1418. Sir Roger de Fynes, builder of Herstmonceaux, c. 1446 (pp. 113-14, 375), fought at Agincourt and in subsequent engagements in the wars of Henry V.

Lord Scales, builder of Middleton Towers in Norfolk before 1460, served in the French Wars, was present at Meaux and Avranches in 1439, and was seneshal of Normandy in 1434.

¹ "The Archaeological Journal," June, 1913: "English Brick Buildings of the Fifteenth Century," by the Rev. J. Kestell Floyer, M.A., F.S.A.

Sir John Tyrrell, who built part at least of Heron Hall in Essex before 1437, was at Agincourt in 1415, and assisted in the superintendence of defensive works at Calais.

Sir John Fastolf (Falstaff of Shakespeare) a distinguished soldier, was at the Siege of Rouen in 1417, and at the capture of many French towns. He was created knight-banneret on the field of Verneuil in 1424, for having captured the Duc d'Alençon, the price of whose ransom was to build for Sir John at Caister, near Yarmouth, a castle (p. 111), at his own expense like his castle at Verneuil. This, Mr. Floyer says, is common tradition, referred to in the eighteenth century by the antiquarian Grose, who found it in a manuscript then in the possession of Mr. Anstis, Garter King of Arms.

It is interesting to note that the bricks of this castle are more roughly made and more irregularly bonded than similar work in contemporary buildings—an existing confirmation of the tradition that it was “a contract job.”

The bond of the earlier English buildings, such as Little Wenham Hall (pp. 107, 359), was very irregular, but in the fifteenth century Old English Bond had certainly come into general use, and persisted until the introduction of Flemish Bond, about the second quarter of the seventeenth century. Strangely enough, English Cross Bond and Dutch Bond, which are English Bond with stretchers breaking joint (p. 440), also used in French castles,¹ were not adopted in England to any extent.

The diaper patterns are also characteristic of mediaeval French brick buildings, where such patterns were developed to an extent unknown in the Low Countries. Comparison of Auffay in Normandy (p. 439), Herbault, Courcelles-du-Roi and these English castles show that the diaper work introduced here, at first tentatively, in the fifteenth century and freely in the sixteenth century, was certainly derived from French buildings. Amongst the best English examples are Little Lee Priory (pp. 154, 360, 437-8), Layer Marney Hall (pp. 139-41, 437-8), Sandon Church (pp. 129, 261), all in Essex, and the Bishop's Palace at Hatfield (pp. 117-119, 440). In each of these the diapers go beyond the conventional diamonds; much of the work being copied from French patterns. Some idea may be obtained of the elaborate nature of French diapers formed by vitrified

¹ E.g. The towers at Rambures, Picardy. The gable of chapel at Tilloloy.

headers and the development of such patterns in bricks of various colours from the examples drawn from Auffay and from a dovecote near Rouen (pp. 364, 439).

For reasons given, we may conclude therefore that the manufacture of bricks in England revived in the twelfth century, and that under the stimuli of easily procured material, example set by settlers from the Low Countries and fashions introduced by the great who had lived in France, its popularity increased. No doubt, also, convenience of handling and the adaptability of the unit, which could be cut, moulded or carved and its colour or texture varied as desired, tended to promote its use in all localities, except those where easily worked stone was procurable in quantities. Where this was the case, it might often happen that brick earths were not available; plenty of stone not infrequently implying scarcity of clays.

Brick Sizes

THE following tables of measurements are from data collected during a period of several years by the writer, except in a few instances, where the name of the authority is given. So great is the variation in sizes of bricks in the same wall, indeed, often in the same course, that observers often differ in the records obtained. Herstmonceaux Castle is a case in point, where the thicknesses are given by Sir Reginald Blomfield as 2 inches, by the writer as $2\frac{1}{8}$ inches (some $2\frac{1}{4}$ inches, few $2\frac{1}{2}$ inches), and by the Rev. J. K. Floyer as $2\frac{1}{2}$ inches, the last being stated to be an *average*. Bricks at Herstmonceaux vary between $1\frac{3}{4}$ to $2\frac{5}{8}$ inches, and it is clear the recorders must have proceeded by different methods ; Mr. Floyer's was probably a maximum and Sir Reginald Blomfield's a minimum or nearly so. The writer has not taken a number of brick measurements and averaged them, because, unless a very great number was taken, that method would almost certainly prove incorrect, depending upon chance in selecting. The method adopted has been to endeavour to find the standard brick by examining a considerable wall area at various points (avoiding narrow spaces and piers, where special sizes might have been chosen to fit in), and to measure that size brick of which the largest number was found. No object was in view but to record the dimensions of the average brick, not the average brick dimensions, and no theory was in view, the support of which might influence selection. The tabulation was only made and its form determined when all the data had been collected.

Brick dimensions have exercised a peculiar fascination upon all students of old brickwork, and many writers have endeavoured, more or less definitely, to date buildings by such dimensions. The results have not always been conclusive. This is hardly surprising when the nature of the material itself is considered. Take Caister Castle, in Norfolk, built by Sir John Fastolf, who died 1459. If the story of its being built for him by the Duc d'Alençon is true, it may have been built within a few years of his capture in 1424. Here the majority of the bricks used are $8\frac{1}{2}$ inches long and $2\frac{1}{4}$ inches thick, but many are 8 inches and $9\frac{1}{2}$ inches long, and frequently 2 inches thick. A large number of measurements show that

four courses (four bricks and four joints) usually rise 11 inches, but many rise 12 inches, and some only $10\frac{1}{2}$ inches. Now it is true that the thorough burning which the mediaeval bricks usually received caused shrinkage and distortion,¹ but the variations, as in this case, are too great wholly to be explained by such contraction. It is common experience to find bricks in a fifteenth century wall differing in length by as much as two inches, each being a whole brick, not a three-quarter-bat, and in thickness as much as three-quarters of an inch. It is therefore reasonable to conclude that moulds varied considerably in size, and that care was not always taken to fill them with clay. This is confirmed by the phraseology of later legislation. "Moulds to be well filled"²; "Make bricks of . . . unsizeable dimensions"³; and again,

"Inconveniencies have arisen to the Public by Frauds committed in lessening the size of bricks under their usual proportion, without diminution in price."⁴

Taxation by the unit turned the scale in the other direction, for it then paid to make bricks larger, and dimensions of 10 by 5 by 3 inches accordingly were made the maximum size chargeable at the lower rate of taxation.⁵

The tabulated measurements do not throw fresh light upon the size in relation to the date theory. They support the view of many writers that the "standard" brick in the fifteenth century was 2 inches in thickness, but show that this was not always so, Caister and Herstmonceaux being notable exceptions. From the middle of the reign of Henry VIII. there was a general tendency (still subject to exceptions) to increase the thickness to $2\frac{1}{4}$ inches. This thickness (established by the Charter of 1571) persisted until towards the end of the seventeenth century, when bricks of $2\frac{1}{2}$ inches became general.

Attempts to date buildings by brick dimensions have been useful only in a vague and general way. The suggestion that bricks varied in length as the ell or yard became the standards of long measure are untenable in view of the great variations found in every piece of walling. The wide disparity between brick measurements in one building and even in one course must prove a fatal objection to such a theory; indeed, close scrutiny leads to the conclusion that care was not exercised in making

¹ "The drying and burning will abate something in the thickness, but little in the breadth, and in the length inconsiderable."—"The Builders' Guide," Wm. Leybourne, London, 1684, p. 130.

² Proclamation, 1625.

³ Preamble 12 Geo. I. c. 35.

⁴ Preamble 17 Geo. III. c. 42.

⁵ 43 Geo. III. c. 69.

moulds, and that probably half an inch or even more was a common variation in any of the dimensions. At best, dating buildings by brick dimensions can only be vaguely approximate, and afford but slender aid to the more reliable architectural features and to precise historic records in determining dates.

CERTAIN STATUTES, etc., REGULATING BRICK DIMENSIONS

1571.	Charter, Tylers' and Bricklayers' Company	
	13 Elizth.	$9 \times 4\frac{1}{2} \times 2\frac{1}{2}$ when burnt. ¹
1625.	Proclamation.	1 Ch. I. $9 \times 4\frac{3}{8} \times 2\frac{1}{2}$ when burnt. ²
1725.	Statute.	12 Geo. I. $9 \times 4\frac{1}{2} \times 2\frac{1}{2}$ for Place Bricks. $9 \times 4\frac{1}{2} \times 2\frac{5}{8}$ for Stock Bricks. ³
1729.		3 Geo. II. $8\frac{3}{4} \times 4\frac{1}{8} \times 2\frac{1}{2}$ within 15 mile radius.
1769.		10 Geo. III. $8\frac{1}{2} \times 4 \times 2\frac{1}{2}$ within 15 miles. Sizes as 12 Geo. I. beyond 15 miles.
1776.		17 Geo. III. $8\frac{1}{2} \times 4 \times 2\frac{1}{2}$ every part of England.

NOTE. By 2 Geo. II. the Tilers' and Bricklayers' Company was divested of powers of administration which were transferred to the Justices of the Peace.

Although the word brick was in use in France (*briche*, quoted by Godefroy, 1264, and old French *brique*)³ it does not appear to have been used in this country until nearly a hundred years later, and not generally until the fifteenth century.

In 1303 bricks were referred to as *Tegulae*⁴ and were sold as such at the Corporation Brickyard, Hull.

- 1335 *Tegularum muralium*.⁵
- 1353 *Waltighel*, sold also at Hull.
- 1357 *Flaundrestieil*.⁶
- 1404 *Walletiell*.⁷ Tiles were called *Thaktiell*.⁸
- 1405-6 *Brike*, at Hornchurch; perhaps ballast to London.⁹
- 1409-10 *Squynchon* is the term used to describe chamfered bricks, probably purpose-moulded.¹⁰
- 1409-10 Bricklayers were called *Tilewallers*.¹¹
- Tilers were tile *Thakkers*.¹²

¹ Tilers' and Bricklayers' Company to administer in London and within 15 miles of same.

² Within the City of London and confines of same.

³ "New English Dictionary." Brick.

⁴ Pipe Rolls & Hull Mins. & Chamblin's Accts.

⁵ "Sacrist R. of Ely," F. R. Chapman, Camb. 1907. Roll vi., p. 67.

⁶ Exch. K. R. Accts. 472, No. 4.

⁷ Fabric Rolls of York Minster.

⁸ *Ibid.*

⁹ "Hist. Agricul. and Prices," J. E. T. Rogers, IV., 434.

¹⁰ "Accts. for Building N. Bar, Beverley," p. 47.

¹¹ "Hist. MSS. Com. Beverley," p. 47.

¹² *Ibid.*

- In 1416 { "Brikes."
 "de Bricke" at Crockernend.¹
 "de Brykes."
- 1426 "License to the venerable fathers, Henry, Bishop of Winchester, etc., to enclose, crenellate, enturret and embattle with stones lime and 'brike' their Manor of More in Rykmersworth."²
- 1437 "Tegulas called Brike."³
- 1442 Brike-leggers = Bricklayers.⁴
- 1444 "Tegulis vocalis Breke."⁵
- 1465 Brekemaker.⁶
- 1481 Brick Kiln, implied in Brick-Kilner. N.E.D.
- 1485 Brekelayer.⁷
- 1500 Bryche-levers.⁸
- 1552 Bryche-Kylne, fornax lateraria. N.E.D.
- 1580 Brick-keele, fornax laterita. N.E.D.

Amongst early references to brickmakers by name in accounts are:—

- 1334-5 Willelms Tegulatori who made bricks at Ely.⁹
- 1357 Johanni Lovekyn supplied 1000 fflaundrestieil for a fireplace at the Palace of Westminster.¹⁰
- 1409-10 Willelmo Katerynson.
 Willelmo Rolleston.
 Roberto Puttok.
 Johanni Elward. } who supplied bricks for building Beverley Bar.

1417. Michael fflemyng was one of "les fflemynges" employed to make "de Brike" at Crockernend (in Nettlebed parish, Oxfordshire) for building at Stonore—expenses in repair of manor of Stonor. The accounts are those of Thomas Warefeld, receiver of Thomas de Stonore. He paid Michael Warrewyk for "the making of 200,000 bricks (de brykes)" and for the "working of the same material," £40. Payments were also made to different (diversis) men for carriage of the said bricks (brikes) from Crockernende to Stonore. Also payments for hire of a house at Crockernend "for the said fflemyng making Brike" and "to Thomas Tiler for repair of the roof of the house of Michael fflemyng."

These entries are particularly interesting as evidence that Flemish workmen were employed in making bricks, and it is reasonable to suppose that similar labour was responsible for the manufacture of brick elsewhere even in the previous century, during which many Flemings settled in

¹ Mins. Accts. 112, 15.

² Pub. 4. Hy. VI., pt. 2 (419), m 10.

³ "Pat. Rolls," 1437, p. 145.

⁴ Pat Roll. Hen. VI., part 3 m, 21.

⁵ Exch. K. R. Accts. 503, No. 12.

⁶ Mann and Housen, Exp. 301.

⁷ Cat. Harleian MSS., 1808, I. 285-1.

⁸ Cocke Lorell's B. (1843).

⁹ Sacrist R. Ely. vi., p. 67.

¹⁰ Exch. K. R. Accts. 472, No. 4.

England. It is further evident that Englishmen were engaged in brick-making early in the fourteenth century and probably before. There is no doubt that bricks were also imported; 1000 bought for a fireplace at Westminster in 1357 may have come direct from Flanders, and in 1444,

“98,000 tegulis vocalis breke were received by indenture of Richard Bokeland, Treasurer and Victualler of the town and marches of Calais, for the walls and chimneys (caminis exterioris) of the outerward of the aforesaid manor of Sheen.”¹

The inconvenience and expense of bringing such a cargo, even by water and as ballast is obvious, and the wide distribution of suitable brick-earths, together with the presence of Flemings, must have favoured home production.

Small bricks were persistently imported from Holland, however, from the fifteenth century onwards; indeed, these bricks seem also to have been brought or imported by Dutch settlers even as far as to the United States. Washington Irving, writing in 1809 the story of “Rip Van Winkle,” speaks of

“A little village of great antiquity having been founded by some of the Dutch colonists in the early times of the province (New York) just about the beginning of the government of the good Peter Stuyvesant and there were some of the houses of the original settlers standing within a few years, built of the small yellow bricks brought from Holland.”

In England the same bricks are to be found at many places on the East and South coasts (I have found them so far West as Topsham, near Exeter), and often many miles inland. They vary in colour from saffron yellow to pale pink. Many are soft and all are irregularly shaped and have good texture. There are some built into the battered base of the South front of Herstmonceaux Castle, which measure $8\frac{1}{4}$ by $3\frac{3}{4}$ by $1\frac{3}{4}$ inches. There are small bricks, 7 by $3\frac{1}{2}$ by $1\frac{1}{2}$ inches, in the parapet of Tattershall Castle, c. 1431-49, but Mr. William Weir (the architect who conducted the restoration) thinks (from the nature of the clay) that these may be of local manufacture. A seventeenth century building with “Dutch” gable at Topsham has smaller bricks of similar make, which measure $6\frac{1}{2}$ by 3 by $1\frac{1}{2}$ inches, four courses rising 8 inches. At Sarre, Kent, in a gabled and dated wall (1687) they are 7 by $3\frac{1}{4}$ by $1\frac{1}{2}$ inches. At Higham, Northiam, Sussex, in internal seventeenth century work they are $6\frac{3}{4}$ by $3\frac{1}{4}$ by $1\frac{3}{8}$ inches. At 102, High Street, Rye, are two sizes, 6 by 3 by $1\frac{1}{2}$ inches and $7\frac{1}{4}$ by $3\frac{3}{8}$ by $1\frac{5}{8}$ inches, the latter in an old chimney, entirely built of them (p. 335), where four courses rise 8 inches.

¹ K. R. Exch. Accts. 503, No. 12.

All these bricks,¹ and many others at places round the coast, are quite different from any English bricks. It has been suggested that they are similar to the modern Dutch clinker, but comparison shows there is no likeness in the clays. Enquiries made in Holland show that bricks akin to these old ones are still made in Friesland (North Holland); that they are used for building houses, but principally for chimney stacks, and that the clay from which they are made is the same. A slightly larger (7 by $3\frac{1}{4}$ by $1\frac{1}{2}$ inches) and pinker brick, known as the Klompje brick, is still imported here from Holland, of which stocks are always kept in London.

Most of the records of brickmakers refer to men bearing English names, but it is more than probable that they were employers of Flemish workmen, just as Michael Warrewyk received payment for bricks made by "flemyns." Further, there is no reason to suppose the bricks of which these buildings were constructed were made from any other than the local brick earths; on the contrary, they usually bear every appearance of such origin.

In 1437,

"William Weysey, brikemaker, King's Serjeant, was appointed to search for earth suitable for making tiles (tegulae) called 'brike,' and arrange with the landowner to dig such earths and to make such tiles."²

In 1442,

"William Wesey, brickmaker, was empowered to impress as many masons and 'brike-leggers' as he might require for the works at Eton."³

In 1485 was issued a

"Licence . . . to reteigne Richard Chezholme, brekelayer."⁴

The last name I shall quote is that of VENTURUS MANDEY, whom a tablet in Iver Church thus commemorates :—

"Beneath this place lies interred the body of Venturus Mandey, Bricklayer, son of Michael Mandey, Bricklayer, and grandson to Venturus Mandey of this parish, Bricklayer, who had the honour of being Bricklayer to the Honble. Society of Lincoln's Inn from the year of Our Lord 1667 to the day of his death. He was studious in the mathematics and wrote and published three books for Public Good: one entitled MELLIFICIUM MENSIONIS or the Marrow of Measuring, another of MECHANICAL POWERS or

¹ "DUTCH OR FLEMISH BRICKS.—I am informed by one that they are $6\frac{1}{2}$ inch long, $2\frac{1}{2}$ inch broad, and $1\frac{1}{2}$ inch thick: another tells me that they are 6 in. long, 3 in. broad, and 1 in. thick. As for my own part, I never measured them. They are of a yellowish colour. They are sold for two pounds a thousand in London. They are commonly used in England for paving edgeways."—"The City and Country Purchaser," R. Neve, London, 1703, p. 39.

² "Pat. Rolls," 1437, p. 145.

³ "Pat. Roll," 20, Henry VI., pt. 3, 21.

⁴ Catal. Harleian, MSS. 1808, i. 285-1.

the Mystery of Nature and Art Unvayled: the third AN UNIVERSAL MATHEMATICAL SYNOPSIS. He also translated into English DIRECTORIUM GENERALE URANOMETRICUM and TRIGONOMETRICA PLANA ET SPHERICA, LINEARIS ET LOGARITMICA . . . and some other tracts which he designed to have printed if Death had not prevented him. He died the 26th day of July 1701 aged 56 years and upwards. He also gave five pounds to the poor of this parish."¹

This type of Bricklayer seems to have died out.

¹ Notes and Queries, 9S., 449, 30-11-1901.

Prices, Wages & Output

Date.	Place and Building.	Quantity.	Description.	Price Per M.	
1303	Hull	54,350	Tegulae	3/1½	Made and sold at Hull Corporation Brickyard.
4	"	92,000	"	3/-	
44	Beverley	3,000	"	2/6	
	"	2,000	"	2/3	
53	Hull	6,000	Waltighel	5/-	
1404	York	98,000	Walleiteill	5/2½	Includes carriage.
5	Beverley	11,000	Tegulae	2/9	
	"	32,500	"	3/-	
8	Hull	1,500	"	5/-	
9	Beverley	28,500	Waltill	3/8	North Bar A/cs.
15	York	6,500	Waltieill	5/-	
33	"	4,800	Waltiles	4/6½	
	Beverley	4,800	Waltil	4/-	
40	Hull	5,750	Waltyle	4/-	
54	"	2,000	Walltyles	3/4	
57	York	6,000	Walltele	5/-	
1409-10	Beverley	1,000	Squynchon	4/2	North Bar A/cs.

All the above are taken from "The North Bar, Beverley," by John Bilson, F.S.A.
Trans. E. Riding Antiq. Society, 1896.

¹ 1307-27	Ely Cathedral, Lodge Chapel		Walltiles	3/8	
² 1357	For fireplace at Westminster	1,000	Flaundrestieill	8/2	
	For Staple House, etc.	18,000	Tegulis	8/-	
	" "	100,000	"	5/-	
³ 1417	Crockernende for Stonore Court	200,000	de Brykes	4/-	at Kiln.
⁴ 1430	Cambridge	2,000	Walltiles	5/-	
⁵ 1449	"	2,000	Bricks	5/9	
⁶ 1453	London	2,500	"	4/-	
^{5A} 1485	Oxford	2,500	"	4/-	
⁶ 1518	Cambridge, King's Coll.	23,250	"	6/-	
⁷ 1579	" "	2,000	"	13/-	

¹ "Hist. and Antiquities of Convl. Ch., Ely." Rev. J. Bentham, M.A., p. 66. ² Exch. K. R. Accts. 472, No. 4.

³ Mins. Accts. 112, 15.

⁴ "Hist. Agricul. and Prices," Prof. Thorold Rogers, III., 430.

⁵ Ibid. III., 432.

^{5A} Ibid. IV., 439.

⁶ Ibid. III., 438.

⁷ Ibid. III., 435.

Date.	Place and Building.	Quantity.	Description.	Price Per M.
¹ 1625	By Proclamation I., Ch. I.		Bricks	8/- "at Kylne."
² 1664	Cambridge	4,000	"	18/-
	Winchester	2,000	"	18/-
³ 1667	London		"	16/- on site.
⁴ 1668	Extremes in Leybourne's experience			9/- to 18/-
⁵ 1683	Not stated	—	"	13/- to 14/-
⁶ 1702	Harting	900	"	14/5½
⁷ 1722	Cambridge, St. John's	10,000		16/-
⁸ 1749	London Place Bricks			11/- at kiln. [London.
	" " "			14/- Westminster or
⁹ 1749	" Grey Stock Bricks			18/-
	London, Grey Stock Bricks, best coloured picked			20/- to 22/- "
¹⁰ 1754	Northiam, Sussex			15/- at kiln.
	Place Bricks			14/-
¹¹ 1756	London { Grey Stock Bricks			20/-
	Red " "			30/-
	Fine old Red Cutting Bricks			50/-
¹² 1788	Brandsby	1,400	"	15/-

The table of prices recorded for bricks covers a period of 480 years—from the beginning of the fourteenth to the end of the eighteenth century. The lowest prices recorded are 2s. 3d. per thousand at Beverley in 1344, and 2s. 6d. in the same year at the same place. Prices in accounts do not always state whether at the kiln or delivered.

While there is a considerable number of recorded prices for bricks, few records exist of wages paid to makers of bricks. In 1334-5, 1/- per thousand was paid for making wall tiles for the new chamber at Ely.¹³ In 1337, 11d. per thousand was the payment for making 18,000 tiles, but whether thacktyles or waltyles is not stated.¹⁴ At Eton, in 1604, 3s. per thousand was the rate paid for making 100,000 bricks.¹⁵

¹ Rymer's "Foedera" XVIII., p. 33, "Proclamation Concerning Buildings, etc., London."

² "Hist. Agricul. and Prices," VI., 519.

³ "The City and Country Purchaser and Builder," by S. P. (S. Primatt) London, d. 14 October, 1667.

⁴ "Architectonice," Wm. Leybourne, p. 106, London, 1668.

⁵ J. Houghton, Letters, 1683.

⁶ "Hist. Agricul. and Prices," VII., 520.

⁷ *Ibid.* VII., 421.

⁸ "London Prices," Batty Langley, p. 2, London, 1749.

⁹ *Ibid.* p. 10.

¹⁰ Lease, Earl of Thanet to John Weekes to set up a kiln at Tufton Place.

¹¹ "The Complete Body of Architecture," Isaac Ware, London, 1756, pp. 745 and 60.

¹² "Hist. Agricul. and Prices," VII., 422.

¹³ Item Willelmo Tegulatori pro facta xviii mill et lx tegularum muralium prec. millen xijd, 18s. Dat eidem ex curialitate Dni 2s. Sacrist Rolls of Ely, by F. R. Chapman, Camb. 1907, p. 67.

¹⁴ "Hist. Agricul. and Prices," J. E. T. Rogers, II., p. 580.

¹⁵ *Ibid.* VI., 624.

In 1651, 8th April, at Quarter Sessions, Chelmsford, the daily wages of "Makers of Brick and Tile and Burners of Wood Ashes and Lime were fixed."

Mid-March to Mid-Sept.		Mid-Sept. to Mid-March.	
With meat and drink 8d.	Without meat and drink 16d.	With meat and drink 6d.	Without meat and drink 12d.
Whole Year			
Wages 3 li.		Livery 10/-	
Their servants and labourers			
6d.	11d.	5d.	10d.
Whole Year			
Wages 50/-		Livery 10/-	

Piece-work scale :—

The digging of the earth, the striking and burning of every thousand bricks, without meat and drink, having straw and all other necessities laid by, 2s. 6d.¹

"VALUATION OF GROUND FOR MAKING BRICK.

"Ground near London, that hath good Clay three or four feet deep is very valuable for making Bricks. It may be accounted that a yard of earth square will make seven or eight hundred bricks. If the owner of the ground will not make the Bricks himself and so take all the trouble and profit, he may let the same for a certain rent to be paid out of every thousand; he may account that he may have a thousand Bricks made and ready for use, all charges for workmanship in fitting the earth, sand and straw, making, turning and burning at seven shillings six pence or eight shillings a thousand; he may add three shillings for carriage of every thousand to the place where the same are to be used, which carriage is either more or less according to the distance of the place; the seven shillings six pence being added to the three shillings for carriage, amounts unto ten shillings and six pence; so that if the Bricks yield thirteen or fourteen shillings a thousand, there is two shillings and six pence profit on every thousand for the Ground, and so if more or less.

"The Proprietor may afford the Undertaker a moiety of the profit at least and so may set certain rent which may be one or two shillings in a thousand, or more or less, according to the goodness and fineness of the Clay and the Ground lying convenient."²

In 1683, Houghton states that a moulder, working alone, will turn out 1000 bricks in a summer's day of 14 or 15 hours. With the assistance

¹ "V. C. Hist. Essex," II., p. 52. Article by Christy Miller.

² "The City and Country Purchaser and Builder." S. Primatt, London, 1667, p. 32.

of a man to temper the earth and of a boy to carry to the hacks he will turn out 2000 in a day, or an extraordinary man 3000. The price for moulding being 4s. per thousand, the actual moulder would take half of this.

"In London I have known them at several Rates, as from 9s. to 18s. the Thousand. That for making the Molder (besides his attendants) hath between 4d. and 6d. a 1000, and about 9000 is accounted a reasonable day's work."¹

In 1703, R. Neve says of stock bricks :—

"For making and burning (besides the digging of the earth) they have 6s. per thousand, which is 1s. more than they generally have for place bricks."²

In 1703, Neve says the rates were :—

" Molder	6d. per thousand.
Bearer off	4d. „
He that tempers the earth	4d. „
He that diggs it	6d. „

"COUNTRY. For making the earth ready (after it is digged, the digging not being reckoned in the making), molding, bearing off and burning, their usual price is 5s. per thousand.

"LONDON, as above, 5s. to 6s. per thousand."³

In 1734, William Leybourne says of output, that : "A day's work is commonly 9000, but a dextrous workman will make about 14,000 to 15,000 in a day."⁴

The "Dictionary of Architecture," Vol. I., p. 139, states that a man will mould by hand 40,000 bricks in a week, and that there is a record of as many as 63,000 in that time.⁵

¹ "The City and Country Purchaser and Builder." S. Primatt, London, 1667, p. 130.

² "City and Country Purchaser."

³ *Ibid.* R. Neve, pp. 44, 45.

⁴ "Architectonice," Wm. Leybourne, p. 63.

⁵ For comparison, the following particulars of output in 1923, furnished by Messrs. Broad & Co., Ltd., West Drayton, may be of interest.

	Per hour.	Per day, 9 hours.	Per week, 50 hours.
An ordinary hand stock brick moulder ..	700	6300	35000
A good ditto	750-800	6750-7200	35250-40000
An exceptional ditto	1000	8500	47000

The day and week's production is made by a stool, which consists of six men and boys, viz., Moulder, Offbearer, Temperer, Flatty, Pusher-out (a boy) and Barrow-loader (a boy).

An ordinary hand red brick moulder ..	112	1150	6000
An exceptional ditto	140	1200	6500

A stool of Hand Moulded Red Brick Makers consists of:—Three Moulders and one man as Temperer, to wheel clay to pug-mill for the three Moulders. Each Moulder "flats his own walk," loads his own barrow and sets down his own bricks.

There are more references to wages paid to bricklayers than to their hours and output. These were often regulated by the local governors of the craft. At Beverley, 1461, an Ordinance provided that

“Wage receivers or hired men called Journeymen, shall observe the constitutions and ordinances made as to them, as is noted in the ordinances of the burgesses of each art, and science in the town in their several places.”¹

Further, Beverley ordinances concerning individual trades include the following :—

“No carpenter or tiler, viz., Tilethakker, Tilewaller and Plasterer, who has not a regular apprentice, who works with him, to employ a journeyman without the consent of the master of the works with whom he works, and the latter may employ any journeyman he pleases and finish a job begun by one with another.”

“Carpenters, tilers and their servants, paviours and their servants and workmen shall observe these hours :—

“From Easter to the Assumption (15th August) from 4 a.m. to 7 p.m. with an interval at 6 a.m. of $\frac{1}{4}$ hour to drink ; at 8 a.m. of 1 hour for breakfast ; at 11 a.m. of $1\frac{1}{2}$ hour to dine and sleep ; at 3 p.m. $\frac{1}{2}$ hour to drink, otherwise they shall not be tardy, or absent from their work, on pain of 12d. to the community. From the Assumption to Easter they shall begin at daybreak and leave off when the light fails. At this season they may have at 9 a.m. $\frac{1}{2}$ hour to drink or breakfast, 12 noon 1 hour to eat ; 3 p.m. $\frac{1}{4}$ hour to drink.”

“No Carpenter, &c., &c., shall refuse to work with any burgess who wants him unless previously engaged on some other work ; penalty, 6s. 8d.”²

The summer hours work out at a week of $70\frac{1}{2}$ working hours, Saturday half holidays being unknown.

The tabulated records of wages paid to bricklayers and their labourers shows not only the changes of rates with time, but also with locality. It might also happen that a man was paid extra for taking charge of the works, as appears to have been the case when the Rev. S. Finch wrote of the building at Whitgift Hospital, Croydon, to the Archbishop of Canterbury, February 18, 1596 :—

“Henry Blease and John Greene, bricklayers . . . have joyntlye taken charge of the bricklayinge works and have xvd apeece the don.”

That this did not work satisfactorily appears in another letter recording that Blease is taken to task for trying to make Kilner, a bricklayer, pay him iid out of his wage of xiiid

“pretendinge he is under you and comoneth in by you . . . but you shall not have your will.”³

¹ Hist. MSS. Beverley, Cd. 284, London, 1900, p. 46.

² *Ibid.* pp. 47–8.

³ Ducarel I., pp. 153, 156.

BRICKLAYERS.

			Wages per diem.	
			Bricklayer.	Bricklayer's Labourer.
¹	1309	Oxford	4d.	—
¹	1317	"	3d.	—
²	1328	"	3d.	2½d.
³	1365	Aylsham	5d.	—
⁴	1379	Oxford	4d.	—
⁵	1399	Hornchurch	4½d.	—
⁶	1409	Dec. Beverley Bar	4d.	—
⁷	1410	July " "	6d.	4d.
⁸	1503	Oxford	5½d.	4d.
⁹	1545	Greenwich	10d., 9d., 8d., 7d., 6d., 5d.	—
¹⁰	1575		1/-	—
¹¹	1588	Eton	1/-	8d.
¹²	1603	Cambridge	1/-	8d.
¹³	1626	"	1/2	—
	"	Eton	1/-	—
¹⁴	1641	Cambridge	1/4	10d.
	1653	Eton	1/8	—
¹⁵	1667	London	3/-	1/8
¹⁶	1702	Bricklayer and man	4/2 say 2/6	1/8
¹⁷	1703	ditto	4/6 " 2/9	1/9
	1704		4/-	2/-
	1705		3/-	2/-
	1708	Bricklayer and man	4/6 say 2/9	1/9
	1708		2/8	—
¹⁸	1749	London	3/-	2/-
¹⁸	1749	Country	2/-	—
¹⁹	1923	Nov. Trade Union rates in London:		
		Bricklayer 1/7½ per hour }		
		Labourer 1/2¾ " }	13/-	9/10
		Week of 44 hours.		

¹ "Hist. Agricul. and Prices," II., p. 290.² *Ibid.* II., p. 299.³ *Ibid.* II., p. 317.⁴ *Ibid.* II., p. 321.⁵ *Ibid.* II., p. 327.⁶ "The North Bar, Beverley," John Bilson, p. 43. Did short day affect wage?⁷ *Ibid.* "2 bricklayers and their men for 1 week, 10s."⁸ "Hist. Agricul. and Prices," III., p. 619. Bricklayer and man, 9½d. per day. The current labourer's wage was 4d.⁹ *Ibid.* III., p. 630.¹⁰ *Ibid.* III., p. 641.¹¹ *Ibid.* VI., p. 617.¹² *Ibid.* VI., p. 624.¹³ *Ibid.* VI., p. 634.¹⁴ *Ibid.* VI., p. 638.¹⁵ "City and Country Purchaser and Builder," by S. P. gent. (S. Primatt) London, 14 October, 1667.¹⁶ "Hist. Agricul. and Prices," VI., p. 651. 1s. 8d. was an ordinary labourer's wage.¹⁷ *Ibid.* VII., p. 493.¹⁸ "London Prices," pp. 84, 134.¹⁹ "Architects' Journal," Nov. 7, 1923. p. xxvii.

Particulars of bricklayer's output have especial interest at the present time, when there are so many complaints of restricted production. Sometimes such output may be inferred from the prices current for materials and labour, together with the cost of the total works, but so long as rates of profit are unknown, no precise information can be extracted.

Certain writers give definite figures.

In 1667, the year after the Great Fire, wages had gone up, and a contemporary writer¹ gives the following information respecting bricklayers:—

“The rate demanded by many of them is seven pound a Rod and they to find all materials; or forty shillings a Rod and the Builder to find them.”

For a rod of brickwork:—

“4500 Bricks at 16s. the thousand is three pounds twelve shillings.

“An hundred and a quarter of lyme at 10s. the hundred is 12s. 6d.

“Two and a half loads of Sand at 3s. is seven shillings and sixpence.

“As for the Workmanship, it is commonly accounted amongst ordinary Workmen that three indifferent Bricklayers and their Labourers to make and serve them with Bricks and Mortar, are able to erect a rod and more every day of low Party-walls and ordinary work; you may reckon that they are not able to do so much on Front-work and Arching-work for windows and that it doth require some small time for to fit their scaffolds, which is some loss in their work; so that if you give the Bricklayers after the rate of three shillings a day and the labourers one shilling and eightpence, the workmanship for the Bricklayers and Labourers, reckoning that a Bricklayer is able to lay (taking the Front and Arch-work with the Foundations and Party-walls) a thousand Bricks every day, one sort of work with another; a Rod of Brickwork, after that rate for Workmanship will amount unto about 21 shillings and for the master Workman for supervising them, and for his scaffolds six or seven shillings a Rod. You may compute the same to amount unto six pound a rod, which may be reasonable for an agreement by the Great, Materials and Workmen being at the rates before mentioned; or if it be only for the Workmanship, you may allow, taking the better sort of work with the worser, one pound eight shillings for every Rod, there being a Master Workman. Or for their ordinary work four or five and twenty shillings. And for the extraordinary work (having their bricks that front the street rubbed, which cost seven or eight pence the hundred rubbing) thirty-four or thirty-five shillings a Rod, it may be reasonable. But if you agree by the Great at the rate of six pound a Rod, materials and workmen being at the dear rate before mentioned, you have that into the Bargain. The ordinary rate for this sort of Brickwork before the late Fire was five or five pounds five shillings at the most for every Rod.”

Several interesting facts emerge from this extract. At the date (1667),

¹ “The City and Country Purchaser and Builder,” composed by S. P., gent. (S. Primatt), London, dated 14th October, 1667. 2nd Edition by William Leybourne, 1680.

the rate being asked for building was £7 per rod for brickwork, the actual cost of which the writer analyses as follows :—

	£	s.	d.
Bricks, sand and lime	4	12	0
Labour—			
3 Bricklayers, 1½ days at 3s. (1000 p. diem)			
p. diem		13	6
3 Labourers at 1s. 8d. p. diem		7	6
			<hr/>
Master workman for supervision and for his scaffolding		1	1 0
		7	0
			<hr/>
	£6	0	0
			<hr/>

Unfortunately he does not separate the cost of supervision from the cost of scaffolding, but apparently the item of 7s. is for supervision and use of scaffolding, the erection of which was done by the workmen as well as laying bricks at the rate of 1000 p. diem, taking one kind of work with another.

Another writer says :—

“ A Bricklayer with a diligent labourer in sound and new work (all materials being ready) may lay a thousand Bricks and upward in a day.”¹

In “ The City and Country Purchaser,” 1703, which enters minutely into costs of various operations, it is stated that

“ A Bricklayer and his Labourer (having all materials ready) will lay in a day about 1000 Bricks in whole work on a solid plane and some very expeditious fellows will lay 1200 to 1500.”²

Leybourne, writing in 1700 and in a later edition in 1734, says :—

“ When all materials are ready a workman with his labourer (in whole work upon a solid plain) will lay in one day 1000 bricks, and some 12 or 1500.”³

Batty Langley is still more definite. Writing in 1749, he gives times for various kinds of brickwork as follows :—

1. “ Common, rough, unjointed Place Brick Walling, as foundations, party walls, etc. In this kind of brickwork a bricklayer and a labourer can lay 1500 bricks per day and not overheat themselves, which I have often experienced.

2. Common Place Brick Walling, as Garden Walls, Out-Offices, Carcasses of ordinary houses, barns, etc., in this kind of brickwork there is more care required in laying the bricks and consequently more time is employed than in rough walling ; and besides, there is also Time expended in scaffolding, which in Foundations is but little, and Jointing, not any ;

¹ “ A Guide for Builders,” Wm. Leybourne, London, 1668, p. 106.

² Page 51.

³ “ Architectonice,” William Leybourne, London, 1700 and 1734, p. 64.

so that to lay a thousand Bricks per day, one day with another, is a reasonable day's work for a Bricklayer and a Labourer, and which every Honest Journeyman will not fail to do.

3. Of Front Walling, faced with Grey Stock Bricks, where every four courses rise but 11 inches, with common joints. I have often experienced that a tolerable good bricklayer, without Hurry or Driving, but working of his own Free-will, will lay in very good Fronts 500 Grey Stock Bricks Per Diem, with common Joints, which is about 1 Brick per Minute, with great neatness."¹

This works out at about 4d. per hour wage for an $8\frac{1}{2}$ hour working day, Batty Langley reckoning the bricklayer's wage at 3s. per diem. As, however, he says in his Preface that the day is

"from Six in the Morning to Six in the Evening, including the usual times for Breakfast, Dinner and Refreshment in the afternoon, without Hurry or hard labour,"²

the day must have been about ten hours and the wage about $3\frac{1}{2}$ d. per hour.

His figures are based on London prices, but, foreseeing objections made to the applicability of these in the provinces, he says :—

"But methinks I hear some object hereto, and say, That Country Workmen are slow, and don't perform Works with that Expedition as our London Workmen do, and, therefore, there cannot be a fixed Quantity of Work ascertained for a Country Workman to perform in a Day. To this I answer, that Country Workmen can, if they will, do as much Work per Day as our London Workmen. For our best London Workmen are chiefly Country Men; who have no more Hands than two each Man; as every of those in the Country have; And therefore, if by an idle Habit of Body, they will not move and work with the same Celerity and Agility of Body, as London Workmen do, let them starve in their obstinate Sloth."³

It may be of interest to quote some of the current rates for brickwork in 1749 from "London Prices."⁴

Foundations, etc.	...	...	...	...	£5	6	0	p. rod and	$12/8\frac{3}{4}$	profit.
Carcassing, etc.	...	...	...	...	£5	10	0	„	16/-	„
Fronts, where 4 courses rise 12 in.	...	...	...	...	£5	12	$0\frac{3}{4}$	„	$15/1\frac{1}{4}$	„
Fronts, where 4 courses rise 11 in.	...	...	...	...	£6	1	$10\frac{1}{2}$	„	19/8	„

The profit is reckoned at $12\frac{1}{2}$ per cent. on materials and 25 per cent. on labour.

The same volume contains prices for almost every description of bricklayer's work, and many prices for work in London and at Ipswich are also included in William Salmon's "Palladio Londinensis," fifth edition, London, 1755.

Under the heading "The Art of Bricklaying," Peter Nicholson, architect (in 1835), says :—

"In common walling, where there are few or no interruptions of apertures or recesses, the bricklayer will lay . . . a rod (4500 bricks) in $4\frac{1}{2}$ days."⁵

¹ "London Prices," pp. 83, 87, 100.

² *Ibid.* VI.—VII.

³ *Ibid.* VII.

⁴ *Ibid.* pp. 85, 89, 94, 97.

⁵ "Architectural and Engineering Dictionary."

It will be seen that from 1667 onwards writers of books upon building prices and costs are agreed as to what a bricklayer's daily output should be and the numbers of bricks which should be laid upon different kinds of work. The day seems to have been one of ten hours net working and, upon ordinary house building, taking one kind of work with another, but excluding rubbed, gauged or other fancy work and tuck pointing, 1000 bricks a day was a number which a man might be expected to lay, with the assistance of one labourer. This allowed for their erecting their own scaffolding, as required. If a rate of 900 bricks a day of eight hours (scaffolding being erected for the bricklayer) be a modern equivalent, the rate of working has not been maintained. Mr. G. H. Roberts, a Labour Member of Parliament, speaking of housing shortage at Wolverhampton Town Hall on 7th June, 1920, said that a bricklayer had been known in competition to lay 2238 bricks in a day, "but the average he had been informed should be not fewer than 800, yet to-day the number laid did not exceed 500."¹

Extraordinary numbers of bricks have been laid in one hour of concentrated effort, which bear no relation to what should be done by an ordinary bricklayer working hour after hour and day after day. The illustrations on p. 397 show Mr. Chris. Hull laying 809 bricks in one hour at Treeton, in Yorkshire, on November 24th, 1924.² The work is of that rough description which the writers quoted reckon should be laid at the rate of 1500 a day. It will be seen that the cross joints are not well flushed up, a fault only too prevalent in ordinary work (even when done slowly) at the present day. On another occasion the same bricklayer laid 844 bricks in one hour.³ These records were surpassed by Mr. John Wood, who laid 879 bricks in one hour at Scarborough.⁴ This was done on a straight 9 inch wall, but "every joint had to be filled up." The fact that several labourers assisted in bringing materials close to hand in these performances suggests not only that the average bricklayer should lay more bricks in existing conditions, but also that a still larger number might be laid by better organised supply and placing of materials.

Correspondence in the press during the last six months on the subject of bricklayers' output has tended to confuse rather than to clear up the

¹ Ministry of Health Journal, "Housing," 21st June, 1920.

² "Sheffield Daily Telegraph," by whose courtesy the photographs are reproduced.

³ *Ibid.* 30th December, 1924.

⁴ *Ibid.* 29th, and 30th December, 1924.

question. On the one hand writers have failed to take into account the variety of work done by a bricklayer, while the Union officials have defended their trade by vague generalities or misleading comparisons, such as, that there are now 36,000 bricklayers, as compared with 92,000 before the war, and that the annual output of bricks is now 5000 millions as against 3000 millions before the war, therefore fewer bricklayers must be laying more bricks.¹ It is clear that the fact that great numbers of bricks are laid by men not counted as being bricklayers, has been ignored. Another disingenuous defence took the form of complaint that there was a shortage of bricks and that this was owing to the machinations of brick manufacturers.² The fact that brickmaking is a seasonal trade is ignored as also is the exceptional demand for bricks in view of the large building programme for the current year. For a whole generation labour leaders have preached the doctrine that restricted output means work for more men. The more enlightened leaders now know this to be a fallacy, but the erroneous teaching cannot quickly be rectified.

It is always interesting to compare wages with contemporary prices, and the following table shows at seven periods the respective prices of wheat from records by J. Thorold Rogers, and artizans' wages with their purchasing power. It is not always possible to find records of bricklayers' wages, but they were usually the same as for carpenters, and other artizans.

Date.	Wheat, per quarter.	Bricklayer per diem.	Artizan per diem.	Days worked to buy a quarter of wheat.	Authority for wheat.
1409-10	4/6	4d. Decr. 6d. July		13½ 9	" 8 Ch. Work & W."
1495	4/0¾		8d.	6	" 6 Cent. Work & W.," p. 567
1533	7/8		8d.	11½	" " p. 389
1593	18/4½		7d.-8d.	27½	" " pp. 390-1
1684	42/0½		1/-	42	" " p. 62
1749	29/-	2/- Country 3/- London		14½ 9¾	" Hist. A. & P.," VII., 84
1923 Dec.	46/9 No. 1 Manitoba	10/- Sussex 13/- London		4¾ 3½	" The Times," 8-12-23

It is obvious that wages did not follow fluctuations in the price of wheat, but the comparison is far from being a reliable one. For example, the

¹ "Daily Herald," 20th February, 1925.

² "Men waiting to build houses but manufacturers' hold-up keeps work at a standstill."—"Daily Herald," 16th February, 1925; also *ibid.* 24th February, 1925.

hours worked now are less than two-thirds of what were worked in summer in the fifteenth century, and the artizan of that time did not enjoy our amenities of civilisation, in the form of public services, education, etc. Further, housing in the fifteenth century was so bad as not to be conceivable by us. The hut was not only without any sanitation, but was so deep in filth, so verminous and so unlike anything we know, as not to be comparable with even the worst modern slum. The difficulty of comparing mediaeval wages and prices is the measure of the impossibility of placing a cash equivalent upon the improved conditions of life.

Brickmaking

THE Roman thin bricks are believed to have been made by kneading plastic earth, beating it into shape and burning thoroughly in kilns, and, while, no doubt, the bricks made in England during Roman occupation were made in this way, those of the mediaeval period and subsequently were made in moulds, after the Flemish manner. Failing illustrations of early brickmaking in England, and with the knowledge that the art was reintroduced here by Flemings and other refugees from the Low Countries, contemporary prints of brick-making as conducted in those countries are of great interest.

The first, a very early one, is from a Netherland Bible published at Utrecht about 1425 (p. 390). It purports to be a representation of the Jews making bricks in Egypt, but, like all mediaeval representations of ancient scenes, it is really a picture of brickmaking as carried on in the artist's own country at the time it was drawn. Such details as are shown do not differ much from modern practice. The kiln is not shown.

The second, an interesting work, entitled ΠΑΝΟΠΛΙΑ by Hartmannus Schopperus, was published at Frankfurt in 1568. It contains illustrations of many artizans, mechanics and others actually engaged in their occupations. Amongst these is Laterarius the brickmaker, or tilemaker. This is reproduced on p. 391, together with the Latin text and a literal translation of it. This apotheosis of the art of brick and tilemaking has been rendered as:—

THE BRICKMAKER'S SONG

A house well builded is ne'er in vain,
For it neither totters nor falls.
So you may laugh at the lash of the rain
On the face of your sturdy walls.

Here's my furnace; let none say it ill,
For nobly it serves its turn,
And here, the maker, with easy skill
And prudence my bricks I burn.

Away with the stones you have bought, rash wight,
 For the house you have builded high
 Stands naked now to the tempest's might.
 Then come to my kiln and buy.

Then here's to Cinyra, Agriop's son,
 Here's to his brick-red shade,
 For he, so the age-old stories run,
 Founded our glorious trade.

The illustration shows the moulder at work, but, although the bricks he has moulded are depicted behind him and under his moulding stool, he seems, at the moment the artist has caught him, to have been engaged in moulding a plain tile. Either he did not use a stock or the artist has overlooked it. In the background is a kiln and on the left a building in course of erection. Having regard to the intercourse between England and Northern Germany at this time, the illustration might equally well represent practice here also. The text may be regarded as an early instance of a brickmaker's advertisement.

Another instance of brickmaking is drawn from Maubeuge, Havre, etc., from a work published in 1761¹ (p. 392). This shows the operations of a brickyard at that date and a detail of moulding stool and implements from the same work is given on p. 390. The following are translations from the descriptions given by M. Gallon of tile and brickmaking :—

“ The work of the Moulder. The earth having been prepared, as stated above, the Moulder wets the frame, then sprinkles it with the dust or fine sand, which is in the trough. He spreads some of this dust on the table at the spot where he wishes to place the mould ; then with the bow (archet) he cuts some earth from the heap, which is by his side on the table and fills the mould tightly. He cuts away whatever protrudes beyond the edges of the mould with the same bow by passing the wire along the upper edges of the mould. He then recharges the mould by heaping up the earth at the angles with the strength of his wrist. He pares this off a second time with his bow and as its wire tears the edges a little, he replaces earth with his thumbs in the defective spots. Finally, he passes over it the strike (la plane), which he has wetted, so as to make the tile very smooth. The carrier, who is a stout youth, presents a pallet (palette) towards a little notch (entaille), which brings the upper side of the pallet level with the top of the table, on which the mould was filled. The Moulder slides the mould, filled with the earth, on to the pallet, and by raising the frame the moulded earth remains on the pallet. Before removing the pallets, the carrier forms the nib (le crochet) by raising the piece of earth attached to the tile, which had been formed in the notch of the frame.”

¹ “ Descriptions des Arts et Métiers ” par Messieurs de l'Academie Royale des Sciences L'Art de Tuilier et la Briquetier. Vol. XXIV. Plate vi.

From this description it appears that a stock was not used, that the tiles were made with nibs and that we use the same term "pallet."

The description of brickmaking in the same volume is more detailed:—

"The moulder plunges his arms into the heap of earth, cuts off a piece weighing from 14 to 15 lb., throws it, in the first place, into the compartment (*la case*) of the mould nearest him, levelling it at the same time with his hand by heaping up the material in it, the excess of which he throws into the second compartment, which was not filled at the first charge, like the other one. He levels this compartment, too, by hand, heaping up the earth and filling any empty spaces. Seizing, at the same time, with his right hand, the strike, the handle of which is conveniently placed at the edge of the wetting trough, in which it has been soaking, he passes it firmly across the mould, to remove all that exceeds the 28 or 29 'lignes' of thickness that the two bricks should be. He gives a tap with the flat of the strike, as with a trowel, on the middle of the mould to separate the two bricks one from the other and places the surplus earth by his side on the table. The Carrier at once draws the mould towards him by the ears and sliding it to the edge of the table, raises it with both hands, turning it over and adroitly placing it on its edge, so that the two bricks, which are soft, can neither fall nor get out of shape. He proceeds to carry the two bricks the length of his walk (*cordeau*), there he holds the mould close to the ground, as if he were going to place it on its edge, but suddenly turning it over he lays it with the two bricks flat on the ground and lifts up the mould. He takes great care to execute this last movement vertically, for if it were done in the least obliquely, the two bricks would certainly be deformed. The Carrier then returns to the 'minette' (sand bin) with his mould. He throws this into the minette, which is filled with sand, sprinkles it lightly and rubs the sand on all round with his hand."¹

Here again it is clear that a stock was not used, although, eighty years earlier, Houghton records its use in England; also that bricks were moulded in pairs in a double mould, such as may be seen in the illustration of a brickyard, and that two moulds were in use at one time.

The mediaeval brick was made in a mould and burnt with wood fuel in a kiln.² At least as early as Elizabeth's reign some kilns were called clamps, although not what we term clamps; indeed, long after "soil" was mixed with brick earth, writers use the terms kiln and clamp, as though they were interchangeable. Letters respecting the building of Whitgift Hospital, in Ducarel's account of the town, etc., of Croydon, etc., relate that:—

"Weeks, your builder, hath been at your brick clamps and commends them for verie good."

Later, there seems to have been trouble respecting other bricks made for the same work, for we read:—

"Rednap came hither this day and as soone as ever he came into the yarde and sawe the bricks, his harte was deade; he went to them and chose one here and there and knockt

¹ "Descriptions des Arts et Metiers" par Messieurs de l'Academie Royale des Sciences. L'Art de Tuilier et la Briquetier. Vol. XXIV., Plate vi.

² 1483-90. Howard Household Books (1841). "Item, to the Brykekyler (brickilner) of Eppswich vvjd."—"New English Dictionary."

on it and said 'he hoped there was better to be founde in the Parke.' To the Parke we came and there wente from clampe to clampe and here he founde and there some one or moe good but not to the purpose of his owne expectation. Faine he woulde have excused himselfe but his handieworke spake against him; and we were so rounde with him, that he burste out into tears, saying 'that was never the lyke served in anie worke, he was ashamde of it; he could not excuse it; it was the wickedness and deceitfulness of the yearth and albeit he could not thoroughlie make amends, yet he could be contente to do what lay in him; but not of that yearthe.'"

The writer goes on to say that they went

"to the lome-pits beyond Dubbas Hill, near Haling-gate, where bricks had been made in time past, where he founde bricke moulds as contented him and agreed to give the Archbishop the making of 50,000, with allowance of 10,000 for waste."

He mentions that "wood must be had from the farm grounds; water fetched in a cart."¹

It will be noted that although bricks were spoken of as in clamps, wood is indicated as the fuel used. The letters are dated 1595.

A reference of date 1679, mentions that "for burning a clamp of 16,000 bricks they use about seven tunns of coal."² This is stated to have been raw coal as brought from the pit.

"In every Clampe or Brickkeele (besides the goodness or badness of the Earth and the well or ill ordering of the Clay) there are three degrees of Brick for goodness. The first and best sort are those which in burning lie next to the fire in the keele, which, if they have much salt-peter in them, they will run and be as it were glazed all over, and these, for lasting, exceed all the rest in that Keele although the Earth and making be the same.

The second and most general sort for building are those which lie next in the Keele, to those before mentioned.

The third and worst sort are those that lie on the outside of the Keele, where the fire hath not so much power as it hath over those nearer, and of these (outside Bricks) those that lie on the wind side of the Clampe or Keele in the time of Burning are the worst of all, for they will molder and turn to dust."³

In 1700, William Leyburn writes:—

"In every Brick Kill (or Clamp) are three sorts of Bricks. Those next the fire are best burnt and such as have naturally much Nitre or Salt-Petre in them, will, with the violence of the Fire run, as if glazed over. And this sort some call Clinkers. The next to these in the Kiln or Clamp are best for General Uses. The outermost in the Clamp are the worst; where the Salt-Petre is not digested for want of heat; and these will molder away like Dirt, with the least moisture; and this sort they call Samel or Sandal Bricks."⁴

¹ "Bibliotheca Topographica," Vol. II., pp. 152, 153, etc.

² "Plot Staffordsh." (1686), 128.

³ "The Builders' Guide," by William Leybourn, London, 1684. Book II., p. 129.

⁴ "Architectonice," by William Leyburn, London, 1700, p. 63.

Samel, etc., is a corruption of salmony, having reference to the colour. It is interesting to read the different wordings of similar statements published at an interval of 16 years. The change in spelling of the word kiln is notable.

In the following description of brickmaking, written in 1683, minute details are given of the mould and stock used. The Proclamation of 1625 refers to moulds, but does not mention the stock. It is probable, however, that this was used by the mediaeval brickmakers. It is possible that tiles were made on a stock in early times, and reference is made to this as being an established practice in 1703.¹ The description of 1683 states that the mould was shod with thin iron, but the stock was of wood, and no mention is made of its being protected. Probably the moulds used in earlier times were not shod with iron, but, in either case, the effect of placing the mould back on the stock, preparatory to forming each brick, resulted in wear of the margins of the stock, owing to the difficulty of replacing the mould quite accurately. In course of time the face of the stock became worn round the margins, and was repaired by a strip of leather or otherwise, the immediate effect of which was to form a raised margin round the face of the stock, which became a sunk margin round the brick.² Such sunk margins are continually found impressed in early bricks, made in England, and also in the small bricks imported from Holland, and warrant the presumption that bricks were made on the stock in the fifteenth century, while the writer has in his possession such a brick which was probably made in Kent in the thirteenth century. The word stock is old Norse, and Teutonic for a board or block, and there is no reason whatever for connecting it with the village of Stock in Essex.

Letters respecting

“The manner of Making Bricks at Ebbisham, in Surrey, in a Letter to the Worshipful Captain James Twiford, now Sheriff of Bristol,”³

describe minutely the process of brickmaking then in vogue. The first is dated 16th June, 1683, but others are not dated, though contemporary.

“We make two sorts of Bricks, viz., Stock Bricks and Place Bricks. The Stock Bricks are made solid, strong and so hard, that we have laid them under a Loaden Cart-wheel, and yet they will not break.”



¹ “The Mold is put on a Stock after the manner of Molding or Striking of Tiles.”—“City and Country Purchaser,” R. Neve, p. 42.

² This explanation of the cause of sunk margins to bricks is given by Mr. Arthur Harris, of Messrs. Broad & Co., Ltd.

³ J. Houghton, Coll. Lett., etc., Impv. Husb. ii., vi., 186.


“The manner of making them is thus:

“We choose a piece of Earth that we commonly call *Haste-Mould* or a stiff *Loam* which is a mixture of a little *Sand* and a great deal of *Earth* without one bit of *Clay*, this *Earth* is with us about three foot deep (although at some places 'tis twenty foot deep, as at *Case-Holton*, and several other places) and two yards square of it will make a thousand of *Bricks* every *Brick* being nine Inches and a half when 'tis made green, four Inches and a half over, and two Inches and a half thick; and the usual Price with us is to pay to our *Landlord* a *Groat* for every thousand we deliver out ready burnt.”

“Before *Christmas* we begin to dig as deep as the *Earth* allows, and lay it as level as can be, and end before *Candlemass*, that it may lye to mellow, that is, that the hard-lumps we dig may shake to pieces; which it will do either by help of *Rain* or *Frost*; when 'tis thus dug, we let it lie till *Lady Day* or *Easter*, when we seldom fear fair weather. Then we water the *Earth* well, and temper it with a narrow Spade about five Inches broad, that the Workman may hold out, with which we dig it down, and then temper it with our bare feet till it is in good case to make a *Brick* on, that is, like a piece of *Dough*, such as will just stick in the *Mould* or *Frame* when lifted up, and not fall off of it self; then we bring to the *Earth* a Table standing upon four Legs, about three foot high, five foot and a half long, and three foot and a half over, and load it with as much as 'twill well bear at the Right Hand and about half way; at the other end are boards nail'd about nine Inches high to lay Sand in and in the middle we fasten with Nails a piece of board, which we call a *Stock*; this *Stock* is about half an Inch thick and just big enough for the *Mould* to slip down upon. Then we have a *Mould* or *Frame* made of *Beech*, because the *Earth* will slip easiest from it. This *Mould*, *Frame* or *Voyder* is made of the bigness of the *Brick* above said, only half inch deeper, to give way for the *Stock* aforesaid, and it must be shod with a thin Iron of half a quarter of an inch thick both on top and bottom and this keeps it from breaking and wearing out; we also have upon the table before the *Mould* or *Frame* a little *Trough*, that will hold about three or four quarts of *water* which we put in, and in it a strike to run over the *Mould* to make the *Bricks* smooth; this Strike is usually made of *Firr*, nine inches long, an inch and a half broad, and half inch thick, we have also on a little Form just by the *Sand-Bin* about 30 little pieces of Board twelve inches long, six inches over, and half inch thick, which we call *Pallat-Boards*. When we are thus prepared with utensils, then one man strows *Sand* on the Table (as maids do *Meal* when they mould *Bread*) and moulds the *Earth* upon it, then rubbing the *Stock* and inside of the *Mould* with *Sand*, with the *Earth* he forms a *Brick*, strikes it, and lays it upon the *Pallat*, then comes a little Boy about twelve or sixteen years old, and takes away three of these *Bricks* and *Pallats*, and lays them upon a *Hackstead*, a rais'd place like a *Balk*, in a *Field*, or a *Border* in a *Garden*, which is a piece of Ground five or six Rod long, two foot over, with a Gutter on each side about a foot deep and as wide a top; which is made by digging half a foot deep, and the Earth that comes thence raises the *Hackstead*; this *Hackstead* must be well beaten, that it may be smooth, level and hard, and upon it the boy lays his *Bricks* edgeways, the thickness of the *Pallats* one from another, on each side of the *Hackstead* a row, and so that the Heads of each row may be two or three inches as under, and we lay them askew, thus  and when they are pritty hard, which in dry weather will be in a Day, then the Boy lays another Course crossways thus  till they come to be ten Course high, then they are covered with *straw* till they be hard and dry which usually is in three weeks

or a month, and then we burn them. One man without a man to temper, or Boy to carry them away, but to temper and lay them himself, will make a thousand in a *Summer's* day viz., about fourteen or fifteen hours, but with a man to temper and a Boy to carry them and lay them as above, he will make two thousand, and an extraordinary man three thousand in a day; and the usual price for this tempering, making and laying is four shillings the thousand, and the maker's part is as much as the Temperer's and Boy's.

"Our *Bricks* being thus prepared, the next matter is to *Burn* them, which is after this manner:

"When we begin a new *Brick Ground*, for want of *burnt bricks* we are fors't to build a Kiln with *raw Bricks*, which the Heat of the fire by degrees *burns*, and this will last three or four year; but afterwards we make it with *burnt bricks*, which we reckon better, and we choose for it a dry ground, or make it so by making *Dreyns* round it. This *Kiln* we build two *Bricks* and a half thick, sixteen *Bricks* long from inside to inside and 12 bricks over from inside and about fourteen or fifteen foot high; at the bottom we make two *Arches* three foot high, three *Bricks* broad, and seven *Bricks* long, that is five *Bricks* longer than the Wall of the *Kiln*, and so the sides will be a *Brick* and a half each; then we set the *Bricks* five Courses high, as they stand in the *Hacksteads*, then we set five Courses more, and allow every Course two or three Inches to hang over, so that at ten Course high there is a clear *Arch*. Of these ten courses one must be set close, and another you may run your finger between every *Brick*, and after that we set three *Bricks* upon them edgeways, thus, till they are five or six and thirty Courses high from the bottom. Then we begin with half a Bavin Fire at a time in each *Arch*, supplying it continually till the  *Water-Smoak* be off; which is done when the Smoak begins to arise black, and usually in twenty-four hours, then we put in a whole Bavin at a time, and make the holes up with Bricks four Course high, to keep the Fire-Feeders shins from burning; and thus we continue till they are at the top red fire hot, which is usually also twenty-four hours, and then we cease our Fire, and let them cool, and sell them as soon as we can for as much money as we can get, but usually about thirteen or fourteen shillings the thousand. The Prices for *Making* and *Burning* is seven shillings the thousand, the *Wood* three shillings the thousand."

From this extremely interesting letter we get an accurate account of making stock bricks on a board called a "stock." Place bricks are only mentioned as another kind and no details are given respecting them. No "soil" is mixed with the earth, and the bricks are not burned in what we should call clamps. Another writer,¹ in 1703, says of stock bricks:—

"These differ not from Place Bricks in form, their difference lying concealed in the Quality of the Earth, they are made upon a Stock, viz., the Mold is put on a Stock, after the manner of Molding or Striking of Tiles and when one Brick is Molded, they lay him on a little piece of Board, a little longer than the Brick and on that Brick they lay another piece of Board, like the first, and on that another Brick, after this manner they lay three Bricks on one another and so they continue to strike and place them on the stage as they do Tiles, till the Stage is full and then they take each three successively and carry them to the Hacks and turn them down on their edges; so that there will be the thickness of a thin piece of Board betwixt each Brick. When the Hack is filled with one

¹ R. Neve, "City and Country Purchaser," p. 42.

heighth of Bricks, from one end to the other, they then begin to set them up upon those which were first laid on the Hack, by that time they will be a little dried and will bear the others; for they are Molded of very stiff Earth. When they set a second or third, etc., height or course, they cater them a little, as they call it, to prevent their reeking. When the Hack is as high as they think fit, they cover them with straw, as they do Place Bricks, till they are dry enough to burn. This way, Workmen tell me is more trouble than the other way, viz., Of making Place Bricks and for making and burning (besides the digging of the Earth) they have 6s. per thousand, which is 1s. per thousand more than they usually have for making of Place Bricks. But they are forced to make them so, because if they lay them abroad in a Place to dry, as they do Place Bricks, the nature of the Earth is such, that they will burst to pieces."

Neve's description is similar to Houghton's, and one notices that straw is also used to serve the purpose of modern hack covers.

Neve also describes building and firing a clamp :—

"They strew sea coal all over the Clamp from bottom to top, viz., betwixt all the rows of Bricks; for they are not laid contingent in their vertical Rows and one Course of Brick is laid one way, and one another, as that there is small interstices betwixt all the bricks, for the sea coal to be strewed into, from the bottom to the top . . . they fire the wood and that fires the coal."¹

In 1749, Batty Langley wrote :—

"Grey and Red Stock Bricks. . . . Of which the first are used chiefly for to face the Fronts of Buildings, either entirely by themselves or mixed with Red Stocks, commonly called Rubbed and Gauged Work; as in the arches of the Heads of Windows, Fascias, Rustic Quoins, etc."²

Place bricks were originally made and burnt quite independently of stock bricks. The processes are described :—

"Place Bricks. This is a general name for all sorts of Bricks that are made after the ensuing method, from whence they derive their name. Now Workmen tell me they are forced to have above one method in making of Bricks not for Fancy sake but out of pure Necessity; the reason of which proceeds from certain different Qualities inherent in different Earths. But, to proceed. Place Bricks and Stock Bricks are the two kinds that receive their names from the Method of their making. Place Bricks are generally made in the Eastern part of Sussex: so called because there is a Place just by where they strike (or mold) their Bricks, which is a level, smooth piece of ground prepared for the Bearer-off (who carries the Bricks from the Strikes) to lay them singly down in Rows, which they call Ricks) as soon as they are Molded and there they are left till they are a little dried, viz., till they are stiff enough to be turned on their Edges and Drest (that is cut off their Inequalities and Rugosities) and when they are dry, they carry them to the Hacks (or places where they Row them up, like a Wall of two Bricks thick, with some small intervals betwixt them, to admit the wind and air to dry them). When the Hack is filled, they are covered with straw on the top, till they are dry enough to be carried to the Kiln to be burnt."³

¹ "City and Country Purchaser," pp. 48-9.

² "London Prices," p. 5.

³ "City and Country Purchaser," 1703, p. 41.

Unfortunately no description is given of the process of moulding or wherein it differed from that of making stock bricks. Apparently it did differ, for reference is made to the necessity for removing inequalities, when partially dried, and Batty Langley (writing in 1749) says :—

“ Place Bricks are the most ordinary sort that are made . . . of which there are two kinds, viz., The common or ordinary sort and another sort, which is made with something more neatness, after the manner of a Grey Stock Brick, which are sold at a shilling a thousand more than the common sort, and are called ‘ Place Bricks made Grey Stock fashion.’ ”¹

This would bring the price to within 3s. of that at which grey stocks were sold. Isaac Ware (writing in 1756) says :—

“ Grey stocks are made of purer earth and better wrought, and they are used in front in building, being the strongest and handsomest of this kind ; the place bricks are made of the clay, with a mixture of dirt and other coarse materials and are more carelessly put of hand, they are therefore weaker and more brittle, and are used out of sight and where little stress is laid upon them ; the red bricks of both kinds are made of a particular earth, well wrought and little injured by mixtures and they are used in fine work, in ornaments over windows and in paving.”²

Batty Langley speaks of prices at the kiln, not at the clamp, but nevertheless, the practice of burning in clamps was well established in London years earlier. The Act 12 Geo. I. c. 35, forbade the mixing of “ Spanish,” i.e. fine cinders, with the brick earth, and also the practice, which then prevailed, of burning place bricks in the same clamps as the grey stock bricks, the place bricks being put on the outsides of the clamps, and so being insufficiently burnt. This was one of the “ abuses ” mentioned in the preamble of the Act, but after a few years it was found inconvenient, and possibly difficult to enforce, and the Act of 3 Geo. II. expressly permitted the very methods the previous Act condemned. It appears, therefore, that the term “ place brick ” lost its original significance ; that in time they were all made “ Grey Stock Fashion,” and that the term “ place brick ” became identified with those bricks, which, through being on the outsides of the clamps were insufficiently burnt. In 1847, Smeaton described place bricks as “ the refuse of a burning, and are in fact those which have not been perfectly burnt ”—a definition equally applicable at the present day. The term “ stock ” is now very loosely used :—(1) Commonly applied locally to any brick most generally produced in a locality. (2) To all yellow bricks, especially if “ soil ” has been mixed

¹ “ London Prices,” pp. 1 and 2.

² “ The Complete Body of Architecture,” p. 59.

with the clay. (3) To red bricks, soiled and burnt in clamps. (4) In its original sense, to bricks moulded on a stock.

In the preceding quotations reference is made to the use of red stocks for rubbed and gauged work, but another and finer brick was also made for this purpose. Ware says of this :—

“One of the red or cutting brick sort . . . for its excellence is very worthy to be particularly mentioned ; this is the Hedgerley Brick ; it is made at a village of that name, of the famous earth called Hedgerley loam. . . . This loam is of a yellowish colour, and very harsh to the touch, containing a great deal of sand . . . the bricks made of this are of the finest red that can be imagined. . . . The red cutting brick or fine red, is the finest of all bricks. In some places they are not at all acquainted with this ; in others they confound it with the red stock and use that for it. . . . The fine red brick is used in arches ruled and set in puttey. . . . This kind is also the most beautiful of all in cornices, ruled in the same manner and set in puttey.”¹

¹ “The Complete Body of Architecture,” Isaac Ware, 1756, p. 60.

Terra-Cotta

THE line of demarcation between moulded brick and terra-cotta is an extremely fine one, so fine as often not to be discernible. Comparison of some terra-cotta with some brick might lead an observer to suppose there must invariably be a wide difference between the two. Terra-cotta is often of fine clay, that may have been deposited several times by nature or of material ground exceedingly fine by artificial means. Brick, on the other hand, may be of coarse material, even containing pebbles and similar objects of relatively large size. Such brick cannot be confounded with terra-cotta. From time to time, however, we have to classify units of ordinary brick size, moulded of the fine or it may be of the coarse material. Again, we find larger blocks of elaborate decoration, which one might naturally regard as coming within the definition of "terra-cotta," but which examination shows to have been made in moulds from precisely the same clay as that of which the walling bricks of the structure are composed. At Sutton Place (p. 294) are tablets, moulded with lozenges, some of which are of clay similar to the terra-cotta of the window dressings, etc., and others of the deep red of the walling bricks. At East Barsham (pp. 147-51, 344-5), where there is a great variety of moulded forms, the problem of distinguishing terra-cotta from mere moulded brick is practically insuperable. Some observers have even recorded as terra-cotta the lumps of soft brick built in blocks about four brick-courses high and carved *in situ*. The square tablets bearing modelled heads in relief or armorial cognizances, some of which are semi-glazed, must surely come within the limits of terra-cotta, and so one would be inclined to classify them until the similarity of their appearance and material to large square floor tiles or quarries inclines the scale of one's judgment in favour of brick.¹

The fine chimney at Thornbury Castle is (p. 343) built up of brick-sized units, moulded to produce elaborate patterns on the shafts, and amongst these are several tablets of brick bearing armorials in relief. Notwithstanding these, it is doubtful whether any authority would class this chimney amongst the sixteenth century terra-cotta work in England.

¹ These show traces of artificial colouring of the surface—rougeing.

At Great Snoring (p. 125), the angle turret is decorated with panels having cusped heads, which are carried up as crocketed pinnacles, with floriated finials into the panels above. The angles are furnished with niches, with trefoil cusped canopies and finials. All these are native Gothic, in moulded or carved bricks as are the bricks of mouldings. Alone, this work would probably not suggest terra-cotta, certainly not foreign influence. But when we regard the detail of the strings we find quite another type of design. Here are tablets bearing portrait heads in relief as at East Barsham, each separated from the next by a brick moulded with a distinct Italian baluster, into the design of which acanthus leaf is introduced. In the lower string are tablets, alternately of lozenge and shield designs.

Whence this new influence? Who modelled the heads for the tablets? The building of these houses can hardly have been carried out under the superintendence of a foreigner, for he would certainly have exercised more influence. Were some of the details imported, ready moulded? If so, one would expect something distinctive in the nature and colour of the earths from which they are moulded. Indeed, it is because of the similarity of the materials that one is disposed to conclude that the work was done on the spot, as the carving was done. If that is so, then some of the moulds must have been imported, or an artist brought to make them, either of which alternatives would account for the Renaissance character of some units. The native craftsman was capable of devising and carrying out the other ornamental details. Ornament and tracery, which owed nothing to the Renaissance, are to be seen at Gifford's Hall (p. 123) in strings, panels and label terminals, which are all brick, as are the armorial shields of the string under the tower parapets which are moulded in two halves, with vertical joints. Here is detail similar to that at East Barsham, without any trace of foreign influence, and the same may be said of the gatehouse at West Stow Hall (pp. 124, 267), where, also, there is a panel of tracery in moulded brick.

If large blocks of moulded clay are to be called terra-cotta, then the moulded coping bricks at Little Wenham Hall would come under that title, and if all units of brick dimensions are to be styled brick, terra-cotta of egg and tongue moulding or guilloche executed by Italians in the same fine material as the windows would necessarily be included. Both these methods of classification are untenable, and we can only regard as

terra-cotta products which are moulded of a finer and more carefully prepared material than brick, whether the units are large or small.

At Great Cressingham, in Norfolk (p. 156), are the remains of a sixteenth century building, which include turrets and wall surfaces of terra-cotta panels. The existing work starts from a terra-cotta string of foliated tracery. The angle ribs between the turret panels are of brick. The panels are of cream-coloured terra-cotta in large blocks (p. 346). These panels contain alternately a hand holding a hawk and a circular wreath enclosing a monogram, consisting of two J's crossed and an E, the three letters being tied by a cord. These are the crest and initials of John Jenny and his wife Elizabeth, who are believed to have built the house about 1545,¹ which is a late date for English terra-cotta, probably the latest example we have. The whole of this work is in the Gothic manner, except the floriations of the tracery and the detail of the wreath.

It is when we come to Layer Marney Towers, or Hall, in Essex, sixty miles away, that we find unmistakable evidences of foreign influence and workmanship. The North side of the great gatehouse, which is that seen as usually approached (p. 139), is sufficiently notable, the vertical lines of the square flanking towers of the central mass being emphasised by the horizontal lines of the low buildings on either side, which give value to and accentuate its great bulk. Passing through the archway and across the terrace we turn to see the group of four immense towers which furnish the gatehouse's Southern elevation (pp. 140-1). They are seven and eight stories high, the pairs connected by a link of three high stories, each equal to two of the tower stories. The brickwork itself is of rich and varied reds, with diapers in many patterns traced in flared headers. The tower windows, strings and arched doorway are all English, but the great windows of first and second floors over the doorway (p. 292), like those of the first floor of the West building (p. 291), come from other hands, which are also responsible for the decorations of the tower parapets (p. 346).

Here is terra-cotta that is not to be confused with brick ; fine in texture, creamy in colour. The mullions and transoms are square in section with baluster and other ornament on their faces, and the cusped heads are formed by scrolls and foliations. The cusping is possibly a concession to native tastes, but all else redolent of Italian influence. The

¹ "Domestic Architecture of England during the Tudor Period." Garner & Stratton, Vol. II., p. 142. Batsford, London.

semi-circular pediments, flanked by dolphins, which crown the angles of the towers, are of similar workmanship.

Henry, Lord Marney, who died 1523, was a prominent personage at court, and some ascribe this work to the hand of Girolamo da Trevizi, or Trevisano,¹ who had come to England in the King's service, and with whom it is thought Lord Marney must have come into contact, which may have led to his working at Layer Marney. This, however, is mere conjecture.

Travelling further South to Sutton Place, near Guildford (pp. 142-5), we find more terra-cotta, also ascribed to Trevizi, but altogether different in design. The house encloses three sides of a quadrangle some eighty-one feet square. The fourth side, in the centre of which was the entrance gateway, flanked by towers only less important than those at Layer Marney, was destroyed in 1782. The house is built of bricks of rich red colour and two inches thick. The diapers are in brown and purple headers, few being vitrified. The parapet, turret, door and window dressings and ornaments (except a few forms in moulded red brick) are of terra-cotta. The blocks vary greatly in colouring, cream, buff, pink, mauve, saffron, red, orange and grey are indiscriminately mixed.

The terra-cotta at Sutton Place is remarkably charming in its varied colourings, set off, as it is, by the rough texture and the rich red of the brick walling. The design of the details is English, the ornament Italian. The doorways are Tudor; those leading into the hall, from North (p. 266), and South have tablets set over them on which somewhat clumsy amorini are modelled. The windows (pp. 294-5) are Gothic in form and mouldings, but the hollows of the latter are enriched with arabesque ornament in relief. The blocks of which the turrets (p. 347) are built bear the initials of Sir Richard Weston, the owner, and his rebus, a tun. Here is a building in which the use of terra-cotta was not merely the introduction of details here and there, but was an essential element in a considered and coherent design; the only one of its kind that we have. The regularity of its façades to the quadrangle is Italian, but that symmetry has not been maintained in the South elevation.

We have now to consider the examples of purely Italian terra-cotta

¹ Dallaway in his "Notes to Walpole" says:—"Girolamo da Trevizi and Holbein introduced both terra-cotta or moulded brickwork for rich ornaments and medallions, or bas-reliefs fixed against the walls, plasterwork laid over the brick wall, and sometimes painted, as at Norwich, and square bricks of two colours, highly glazed and placed in diagonal lines, as at Layer Marney."—Quoted by C. F. Hayward, in "Trans. Essex, Arch. Soc." Colchester, 1865, Vol. III., part i, p. 26.

design in this country, which have been carried out unfettered by native predilections. Terra-cotta is a material particularly suited for tablets and panels, such as the roundels at Hampton Court, which contain the busts of Roman Emperors (p. 348). These were the work of Joannes Maiano, who was paid £2 6s. od. each for them. At the Record Office is a letter from him asking for payments and describing them as "*rotundae imagines ex terra dipictae*," and stating that they were intended for "*Anton Cort*."¹ The beautiful tablet of Wolsey's arms over the arch in the Clock Court, if not from the same hand, is of the same school.

The same certainty cannot be maintained as to the authorship of the terra-cotta tombs at Layer Marney Church, at Oxburgh Church, and the Sedilia at Wymondham Church. Of these the tomb of Henry, Lord Marney, in the Layer Marney Church (pp. 349-51), is the most important, being complete with canopy and recumbent figure, the latter sculptured in touch. The detail is of the same character as that of windows and of the parapet pediment of the towers, the dolphins flanking each semi-circular pediment being slightly different in design and having finer detail, as might be expected of objects so much nearer the eye. The adjoining tomb of John, Lord Marney, who died a couple of years later, has a similar base, but lacks the canopy. Both tombs are of pale pink terra-cotta, which has been whitewashed, and they are generally ascribed to Trevizi. However that may be, Henry Lord Marney's daughter, Grace, was married to Sir Edmund Bedingfeld, of Oxburgh Hall, in the county of Norfolk. Her husband's mother, Margaret Bedingfeld, who died 1517 (by will dated 1513), provided :

"Fyrst I bequeathe my soul unto our Lord God, my bodye to be buried within the chancell of Oxburgh before the holy ymage of the Trynyte, where I will a chapell be made by my executors for husband and me."

The tradition at Oxburgh is that Grace Bedingfeld, or Marney, employed the artificer of the Marney tombs to go and make those in Oxburgh Church. Comparison of the tombs (pp. 352-4) confirms this tradition. They are clearly from the same hand, and some of the details are identical, as the dolphin pediments, the entablatures, etc., but the tombs at Oxburgh are far from being repetition work. The treatment of the pilasters is in the form of sunk panels, where at Layer Marney split balusters have been applied and each Oxburgh tomb has a superstructure (not identical) of

¹ Cal. S.P. Hen. VIII., iii., No. 1355, from "*Hist. Hampton Court Palace*," by Ernest Law, I., p. 50.

cylinders, crowned with small triangular pediments and amorini, while one tomb includes an arched entrance to the chapel.

The story that the author of the Marney tombs was commissioned to go to Oxburgh is confirmed by the Sedilia in Wymondham Church (p. 355), Norfolk, which includes some of the details found at Marney and Oxburgh, with further variations. These Sedilia appear to have been designed as Sedilia, and bear no evidence of ever having been a tomb, afterwards altered to the present form. All these are also of pale pink terra-cotta, white-washed. That these tombs, the Sedilia and the windows at Layer Marney are the work of one man or of one group of men, who worked and travelled together, there can be little doubt, but there is no evidence to connect them with any historic name.

With the exception, perhaps, of a tablet or coat of arms here and there, this is the record of terra-cotta in England. Tombs at Arundel and in the City of London¹ prove, on examination, not to be made of this material, and the fireplace at Layer Marney described as terra-cotta in the Historical Monuments Commission's Report on Essex is of a hard marble. The history of terra-cotta is confined to fifty years; its production the work of foreigners or of men working under their instructions, and perhaps some fragmentary efforts by English brickmoulders, using patterns by foreign designers. It is strange that the use of the material died out so suddenly, though the application of renaissance detail (from other than Italian sources) increased. Yet moulded brick continued to be made. On the whole, however, the Elizabethan brickwork was simpler, the brick chimneys less rich than those of the first half of the sixteenth century. Yet in less than a hundred years after the last bit of terra-cotta was made here, cornices, pilasters, columns and capitals were being moulded in brick-sized units, built up in the same and carved, where the Italian would have modelled and cast in terra-cotta blocks.

¹ Except, perhaps, the effigy of Dr. John Yong (d. 1516), in the Museum of the Public Record Office, which is painted in colours, so that its material cannot be determined with certainty.

Statutes, Proclamations & Orders

FROM time to time legislation, national and local, has regulated the manufacture and sale of bricks and tiles. Extracts and summaries of the more important of these are given, but it is not practicable to follow the orders of local assizes, etc., which controlled such matters. One instance will suffice. In 1425-26, at Colchester, complaints had been made as to the irregularity of tile sizes and Quarter Sessions sitting at Chelmsford dealt with the matter—

“diverse fourmes, more and less, none of them accordaunt to other, to noissance and harmyng of the said people . . . ordayned by Bailiffs and General Council. . . . No Tyle maker make no manner of tyle but all after a fourme . . . in Moothalle of said Towne, upon payne of xxs.”¹

No dimensions are stated. The official mould was to be kept at the Moothall and those concerned must refer to it. Mr. Bilson mentions an assize at York in 32 Elizabeth, which is stated to have fixed the size of bricks at 10 by 5 by $2\frac{1}{2}$ inches.²

The Statute of 17 Edward IV. c. 4, 1477, which has so often been quoted, referred to tiles for roofing only. Batty Langley seems to have confused this with a Georgian statute (he also writes Edward III. for Edward IV.), and subsequent writers have faithfully copied his errors.³ As the statute formed a basis for clauses in subsequent acts relating to brick as well as tile making, the following extracts may be interesting :—

“Item, Whereas in divers Parts of this Realm great damage hath been and daily is, and by liklihood in time to come will much increase, for Default of true seasonable and sufficient making, whiting and anealing of Tile, called plain Tile; otherwise called Thaktile, Roof-tile or Crest-tile, Corner-tile and Gutter-tile, made and to be made within this Realm: Our Lord the King . . . hath ordained . . . the Earth . . . shall be digged and cast up before the first day of November next before that they shall be made and that the same Earth be stirred and turned before the First Day of February then next following the same digging and casting up and not wrought before the First Day of March next following: and that the same Earth . . . be truly wrought and tried from Stones: and also that the Veins called Malm or Marle, and Chalk, lying commonly in the Ground . . . shall be . . . severed and cast from the said Earth. . . . Every such plain Tile . . . shall contain in Length Ten Inches and Half, and in Breadth Six Inches and a Quarter of an Inch, and in Thickness Half an Inch and Half a Quarter.”⁴

¹ “The Victoria County History, Essex,” II., quoting Benham, “Red Paper Book,” p. 49.

² “The North Bar, Beverley.” “East Riding Antiquarian Society Transactions,” Vol. IV., 1896, p. 47.

³ “London Prices,” p. 2.

⁴ “Statutes of the Realm,” II., pp. 463-5.

Dimensions of the other tiles are also stated, and minute provisions for enforcing the Act, which Justices of the Peace in every country are to administer.

The following condensation of the charter granted by Queen Elizabeth to tilers and bricklayers in London and suburbs within a fifteen miles radius was extended later to control of brickmaking, for it is mentioned in this relation in 12 George I. It is interesting as an important event in the history of the clay-working industry.

CHARTER granted 3rd August, 1567, by Elizabeth to tilers and bricklayers in London.

"The Queen. Know that we have granted . . . to Thomas Spenser . . . and all the other freemen of the mystery or art de le Tylers and Bricklayers of our City of London and the suburbs of the same, that henceforth they be . . . one body and one perpetual society incorporate of one Master and two Wardens . . . and the society of free men of the same mystery or art of Tylers and Bricklayers of London. And we ordain and appoint by these presents Thomas Spenser for the first and present Master and John Cawyer and Thomas Bradley for the first and present Wardens or guardians of the same mystery or art . . . de le Tylers and Bricklayers of London and by that name be able to implead . . . in any courts whatsoever. And that they have a common seal. . . . And that the said Master Wardens and Society be persons able . . . to acquire . . . lands . . . to the value of £50 a year . . . in aid of the . . . poor men and women . . . of the aforesaid society. . . . And moreover we have granted that the Master, Wardens, &c., and their successors be able to make ordinances, &c., for the government of the freemen of the aforesaid mystery . . . to appoint reasonable penalties . . . for infringing such ordinances, &c. . . . and . . . to receive into it any able honest and discreet workman, expert in the same mystery or art of Tylers and Bricklayers, and to expel any one from it. . . . We . . . grant . . . to the aforesaid Master, Wardens and society that they . . . shall have scrutiny, correction and governance of all and single freemen of the said Society . . . in the same city or suburbs. And of other freemen or foreigners . . . frequenting and using the said mystery . . . within the . . . city . . . liberties and suburbs . . . within . . . fifteen miles of the said city of London."¹

The following quotations (condensed) are from a Proclamation by Charles I. in 1625. Its regulations for treatment of earth for brickmaking are substantially those of 17 Edward IV. for tiles :—

"A Proclamation concerning Buildings and Inmates within the Citie of London and Confines of same.

Orders concerning the true makinge and ratinge of the price of Bricks.

The Earth to be dug between the feast of St. Michael the Archangel and St. Thomas the Apostle.

Second digging or turning up before the last day of February, then following.

¹ "Pat. Roll," 10 Eliz., pt. 12 (1052) m. 35, 36.

No digging or brick to be made within one mile of city gates or one mile of the Palace of Westminster.

Moulding only to be done between the Feast of Annunciation of the Blessed Virgin Mary and the last day of August.

The moulds are to be well filled.

The bricks are to be well dried before they are put into the Kylne and thoroughly burned, so as for the Assize every brick being burned contain in length nine inches, in breadth four inches and one quarter and half of a quarter of an inch, in thickness two and a quarter inches.

The price of bricks wrought in goodness, size and manner as aforesaid, shall not exceed eight shillings a thousand at the Kylne.”¹

A Charter of 12 Ch. I. pt. 7, incorporating the bricke and tilemakers of the City of Westminster to “search and view works, parcels and quantities of bricks, tiles, etc.,” and to receive “apprentices was withdrawn on the 7th July three years later.” Pat. 15, Ch. I. pt. 23, N. 12.

An Order made by the Lord Mayor, Aldermen and Common Council of the City of London, dated 29th April, 1667, and approved at the Council at Whitehall, 8th May, 1667, ordains:—

“And that they (the Surveyors) do encourage and give directions to all Builders for ornament sake, that the Ornaments and projections of the Front-Buildings be of rubbed Bricks: and that all the naked part of the walls may be done of rough Bricks neatly wrought, or all rubbed, at the discretion of the Builders, or that the Builders may otherwise enrich their Fronts as they please.”

The Order adds later:—

“The upper Rooms or Garrets may be flat Roofs encompassed with Battlements of Bricks covered with stone.”

An act for rebuilding the City of London, 19 Ch. II. c. 3, 1667, begins by describing brick as “comely and durable,” and after prescribing wall thicknesses for buildings of various heights, proceeds to say that: For encouragement of builders in case of combination or unreasonable exaction by brickmakers, tilemakers and lime-burners, Justices of the Court of King’s Bench, on complaint of Mayor and Aldermen, are empowered to call before them a number of brickmakers, etc., making and burning brick, etc., within five miles distance of the Thames, and confer with them to fix price of every thousand bricks, etc., and for carriage of materials. In case of combination or exaction of unreasonable wages by brickmakers, etc., the said Justices on like complaint are also empowered to limit the rates and appoint the wages of the said artificers, by the day, week, or

¹ Rymer’s “Foedera,” XVIII., pp. 33. 34.

otherwise. Those who refuse to work for such wages to be committed to gaol for a month or to pay a fine not exceeding £10.

In 1725, legislation became necessary in respect of brickmaking to strengthen the administration of previous acts by the Company of Tilers and Bricklayers and to bring the Proclamation of 1625 up to date. In this Act exception is taken to the mixing of "soil called Spanish" with the earth and to the use of breeze instead of coal as fuel. The use of the word "soil" in two senses has caused some confusion exactly as to what is meant by the word "Spanish." The "New English Dictionary" is certainly wrong in defining it as "earth or clay unfit for brickmaking."

An advertisement in the "London Gazette," 20th to 23rd March, 1713, offers :—

"Two closes of Pasture adjoining St. Pancras, in the county of Middlesex Together with two stools Earth, of Brick-Earth, ready dug and spanished, and between two and three Acres of Brick-Earth are to be Lett from Ladyday, next."

The inference is that the brick earth had been prepared by the addition of something called Spanish, and this is confirmed by the wording of the Act of 3 Geo. II. c. 22, which states that the Act of 12 Geo. I. forbidding the mixing of Spanish with the brick earth "had been found inconvenient," and proceeds to permit the mixing "of sea coal ashes" with brick earth. It then authorises the use of cinders or breeze as fuel. This identifies "Spanish" as a term for sea coal ashes.¹ The following extracts are in the words of the 1725 Act, condensed. 12 Geo. I. c. 35 :—

"To prevent Abuses in making Bricks and Tiles. To ascertain the dimensions thereof. To prevent all unlawful combinations amongst Brickmakers and Tilemakers within fifteen miles of the City of London, made to advance or enhance the Price of Bricks or Tiles."

It refers to 17 Edw. IV. c. 4 re tiles and to Elizabeth's Charter of 3rd May of tenth year of her reign, granted to tilers and bricklayers of London to be one body corporate and whose powers extended a distance of fifteen miles. It proceeds to say that several orders have been made by the Master and Wardens of the said Society, which have been confirmed pursuant to Act 19 Henry VII. c. 7. This Act merely made valid the ordinances of bodies incorporate, and continues :—

"Notwithstanding Acts of Parliament, Orders and Ordinances, persons within fifteen miles of the City of London dig clay at unseasonable times of year, make bricks of

¹ In "A Sure Guide to Builders," London, 1729, B. Langley states that Spanish is Sea Coal Ashes, p. 172, and that the Company of Tilers and Bricklayers "did ignorantly represent (to Parliament in 1725) the use of Spanish as most pernicious," p. 173.

bad stuff and unsizable dimensions, and do not well burn the same and in making thereof mix great quantities of soil called Spanish and in burning thereof use small ashes and cynders, commonly called breeze, instead of coals and burn the bricks, commonly called Grey Stock Bricks in Clamps, and the bricks commonly called Place Bricks in the same Clamps, on the outside of the said Grey-Stock bricks, by means whereof great part of the bricks now usually made are so hollow and unsound that they will scarce bear their own weight. And whereas there is at present no provision made by any law for the dimensions of bricks," etc., etc.

It is then enacted that

"All earth . . . shall be dug and turned between the first November and the first of February ; no part made into bricks until after the first of March and no bricks made for sale but between the first March and the twenty-ninth of September. No Spanish shall be mixed with brick earth, nor any breeze used in the burning and all bricks shall be burnt in kilns or in distinct clamps, the Place Bricks by themselves and the Stock-bricks by themselves."

The dimensions of place-bricks are to be not less than 9 by $4\frac{1}{4}$ by $2\frac{1}{2}$ inches and of stock-bricks 9 by $4\frac{1}{4}$ by $2\frac{5}{8}$ inches. The Master and Wardens of the Company of Tilers and Bricklayers are given powers to enforce the Act.

Apparently the Master and Wardens of the 'Tilers' and Bricklayers' Company did not effectually enforce the Act of 12 Geo. I. c. 35, for another Act was passed, 2 Geo. II. c. 15, which divested them of their powers and transferred them to the Justices of the Peace, but this Act was to cease after 25th March, 1731.

"The said Company having permitted and encouraged divers Persons to make bricks contrary to the directions of this Act . . . they are therefore divested of the aforesaid Powers so given them by 12 Geo. I."¹

Then comes the Act of 3 Geo. II. c. 22 providing :—

"An Act for amending the Acts therein mentioned relating to the making of Bricks."

"Whereas the Dimensions of Bricks and the making thereof without any Spanish and the burning of the same without cinders commonly called Breeze, either in kilns or in distinct Clamps by themselves, according to the Act of 12 Geo. I. has been found inconvenient and further directions were given by the Act of 2 Geo. II. It is now enacted that any person within fifteen miles of the City of London may make and burn any Bricks for sale which when burnt shall be eight inches and three quarters long, four inches and one-eighth broad and two inches and a half thick. And may make and burn in Clamps for sale or expose to and for sale Bricks made of real Brick Earth wherein may be mixed any quantity of Sea Coal Ashes, sifted or screened through a Sieve or Screen half an Inch wide and not exceeding twenty loads to the making of one hundred thousand of Bricks, each load not exceeding thirty six Bushels and in that proportion for any other number or Quantity of Bricks, and may use Cinders commonly called Breeze mixed with coal, in the burning of Bricks in Clamps for Sale. Stock-Bricks and Place Bricks may be burnt in one and the same Clamp."²

¹ "A Sure Guide to Builders," p. 173.

² The phraseology of the Act has been preserved, but the text has been condensed.

9 Geo. III. c. 37, revived and continued the last three Acts.

10 Geo. III. c. 49, continued the last four Acts and provided that :—

“All clay which shall be dug in England to make bricks for sale shall be turned at least once between the first day of February and the time of beginning to make such bricks. Penalty 10s. a thousand.

Persons in London may dig Brick Earth for making Bricks at any time in the year, provided they turn it once before making the bricks.

Sieves or Screens for sifting Sea Coal Ashes to mix with Brick earth not to exceed a quarter of an inch between the meshes of such Sieve or Screen.

Any person is allowed to use Cinders (Breeze) in the Burning of Bricks in Clamps.

Any person may make and burn Bricks within the City, &c., of London, which when burnt shall not be less than eight and a half inches long, four inches broad and two and a half inches thick.

The dimensions prescribed by Act 12 Geo. I. for bricks made beyond fifteen miles of the City of London to continue.”¹

17 Geo. III. c. 42. Refers to expiry of laws heretofore made for regulating the dimensions of Bricks for sale and proceeds :—

“Inconveniences have arisen to the Public by Frauds committed in lessening the size of Bricks under their usual proportion without any diminution of price. It is enacted that, after first July, 1777, all Bricks made for sale in any part of England shall, when burnt be not less than eight and a half inches long, four inches broad and two and a half inches thick. Penalty 20s. per thousand Bricks.

Quarter inch mesh for Screen for sifting Sea Coal Ashes to be mixed with Brick earth in the making of Bricks.

Brick manufacturers are not to combine to advance or enhance price of Bricks and all contracts between Brickmakers for ingrossing of Bricks or hindering their free sale be null and void. Penalties: Brickmakers, £20; Clerks or Servants, £10.”²

The Worshipful Company of Tilers and Bricklayers of the City of London possess transcripts of their records made by John Miles in 1859. In addition to the Charters recorded, these include the following :—

13 Elizabeth (1571), which specified the dimensions of bricks as 9 by $4\frac{1}{4}$ by $2\frac{1}{4}$ inches. Of plain tile, $10\frac{1}{2}$ by $6\frac{1}{4}$ by $\frac{5}{8}$ inches. Rough tile, 13 inches long and 1 inch thick, with “depth convenient as it ought to be.” Cover tile or corner tile, $10\frac{1}{2}$ inches long, “with convenient thickness and depth as they ought to be.” It also ordains that “Tilers and Bricklayers are not to lay in any house in the City of London or within 15 miles thereof, any crasier or samnel tiles or brick.” Also that “Any that maketh chimnies shall cut and hew the champhlets two inches and a half square.”

The Company’s charters of 2 Jas. I. and 1 Jas. II. dealt with the constitution of the Company and its powers.

¹ The phraseology of the Act has been preserved, but condensed.

² The phraseology of the Act is condensed.

The Company seems to have lost its hold of the trade, many workmen were not attached to it, and there were frequent complaints of bad workmanship. On 1st July, 1658, the Common Council of the City of London ordered re-establishment of the Company to control all tilers and bricklayers and its minutes, following this order, show renewed vigour in its exercise of disciplinary powers.

Early minutes record that apprentices were bound for eight years.

The demand for bricklayers, tilers, etc., following the Fire of London in 1666 seems to have brought about a position similar to that of the present day, as the following extracts from minutes show :—

“ 19 . 11 . 1666. This Court, taking into consideration that the rebuilding of the City of London will require a greater number of hands than the Freemen of this Company with all their apprentices can make . . . order . . . ”;

then follow various regulations increasing facilities for taking apprentices. These proved inadequate, however, and we read that :—

“ 5 . 11 . 1667. Notwithstanding the additional number of apprentices allowed the members of this Company . . . the Freemen are not able . . . to perform the work . . . which the rebuilding of the City requires. . . . Foreigners and Country bricklayers (through indulgence of the Act of Parliament) . . . employed in . . . said rebuilding . . . keep as many apprentices as they think fit. . . . Order. . . . ”

Then follow further provisions for taking more apprentices.

On the 21st October, 1667, the Company decided to take

“ a course in law with all Foreigners who do use the trade of Bricklaying in a larger extent than by the late Act of Parliament for rebuilding the City of London they are indulged in and allowed to do.”

7 Anne, fol. 263, enacts:—

“ That after the 1st day of June 1709 no Door Frame or Window Frame of Wood to be fixed in any House or Building within the Cities of London and Westminster, or their Liberties, shall be set nearer to the outside Face of the Wall than four inches.”¹

This is probably the first legislation respecting reveals, and the reasons given are that if placed very near the outside of the Wall “as has been the practice of Workmen,” they decay sooner and are more liable to be fired “in time of Fire.”

¹ Quoted in “A Sure Guide to Builders,” p. 167.

Tax on Bricks, 1784—1850

ACTS:—

24	Geo. III. c. 24.	Duty 2/6 per M.
27	c. 13 Sch. A.	Duty on imported Bricks 7/2 per M. Drawback on exported Bricks 6/8 per M. F. Duties of Excise 2/6 per M.
34	c. 15.	Duty raised to 4/- per M.
43	c. 69.	Duty under 150 cubic inches 5/- per M. over 150 cubic inches 10/- per M.
2 & 3 Vic.	c. 24.	Duty under 150 cubic inches 5/10 per M. over 150 cubic inches 10/- per M.
13 Vic.	c. 9.	Repeal of all Duties, Drawbacks and Excise.

THE duties on bricks produced two results, each being methods of evasion. The first was substantial increase in brick dimensions—a large brick paying the same duty as a small one—and this was met by the Act of 43 Geo. III., which imposed double duty on bricks measuring over 150 cubic inches. The second was the extensive use of brick-tiles, also called mathematical tiles, which formed exceedingly close imitations of brickwork. They were probably in use many years before the introduction of the Brick Tax¹ and were made both as headers and stretchers, bedded in mortar and hung in the manner of Flemish bond, so as almost to be indistinguishable from brick walling. The use of painted wood applied at the angles to represent quoins assisted the illusion. The Garden House, Rye (p. 244), is built of timber framing on a brick base, the framing being hung with brick-tiles and having painted wood quoins. The inset shows header and stretcher brick-tiles. These brick-tiles were also nailed over ancient timber and plaster walls to make them weather-proof.

¹ "The Dictionary of Architecture," Vol. III., p. 49. London, 1849 and after.

Characteristics of Brick

EVEN a cursory survey must impress the observer with the widespread use of brick not only in this country, but all over the world. Yet it is a manufactured building material, requiring much time and labour for its production. It is obvious, therefore, that brick must possess certain advantages over other materials. Amongst these, the following may be noted :—

- (1) Brick earths are found almost everywhere.
- (2) The variety of these earths and the differing qualities that each possesses enables many kinds of bricks to be made.
- (3) Being made in moulds, the sizes may be regulated to any requirements. For most purposes bricks measuring 9 by $4\frac{1}{4}$ by $2\frac{1}{2}$ inches are found convenient as capable of easy and quick handling by the bricklayer and presenting a pleasing appearance.
- (4) Brick is a “warm material.” Its porosity makes it a good non-conductor. Brick walls having the usual $2\frac{1}{4}$ inch cavity make warmer dwellings than similar cavity walls of concrete. Buildings of the latter erected by Government during the war proved that the brick dwellings were much more popular with occupants for this reason.¹
- (5) Well-made, well-burnt brick has proved the most durable of all building materials, withstanding the elements for many centuries, without deterioration.
- (6) There is almost no limit to the variety of forms, textures and colours in which brick can be produced, nor to the multitude of ways in which it can be used. It is in these directions that we may hope for future development.

¹ The Report, issued 1923, by the Building Research Board (No. 7) on “Heat Transmission through Walls, Concretes and Plasters,” states that a wall having a cavity between two thicknesses of concrete block transmits 24 B·TH·U per sq. ft. per 24 hours, whereas a solid 9 in. Fletton brick wall transmits 14 B·TH·U in the same time.—Quoted by “The British Clayworker,” November, 1923, p. 219.

- (7) Economy not only in first cost and in the results which may be obtained, but also economy in maintenance. From time to time we hear of buildings built of stone, which has perished in a City atmosphere, not because it was inferior stone, but because it was not suitable for withstanding conditions in which it was placed. A case in point is the front of the Carlton Club, built about 1850, which has recently been refaced. The brickwork of Marlborough House, built by Wren 150 years earlier, like that of other brick buildings in the neighbourhood, has withstood the same conditions without any decay.

Provided fashion does not oust brick in favour of modern substitutes (fashion often succeeds in substituting the worse for the better) brick seems likely to hold its own for all ordinary building works. The buildings illustrated in this volume are proofs of the durability of brick, and the many admirable qualities they possess are so largely due to this material as to merit the closest study. Success in handling building material has ever depended upon intimate knowledge of its capabilities and limitations. Of no material is this truer than of brick, and the masterpieces of brickwork owe as much to the craftsmen as to the designer. The failure of the late nineteenth century brickwork revival was owing to the designer's failure to understand the material and to the extinction of intelligent craftsmen whose achievements in earlier work was the fruit of long and intimate experience.

Factors

THREE factors are essential in brick for production of good visual results. These are Form, Texture and Colour. They should be found in brick used alone and also in brick in combination with other materials.

Regarding Form in its most restricted sense, that is as applied to the individual brick, we find the Tudor brick possessed of considerable character in this respect. Whether this was produced by the rough methods of manufacture and by the very thorough burning or similar causes other than intention is immaterial. No two bricks were alike. They varied not only in their dimensions, but in shape. Some were twisted, most were hatched¹ on bed, often on face, and this was one reason for building with thick joints. The prejudice against such bricks is generally owing to some supposed intention to associate them with fine ashlar or carved stonework of Renaissance character ; an association which might be quite unsuitable. This kind of brickwork properly belongs to the picturesque style. It is convenient to think of brick in parallels of dress fabrics—Tudor brick as homespun ; Restoration and early Georgian brickwork as faced-cloth, and rubbed and gauged brickwork as silk or satin. Such stone as Portland, moulded and carved, is like fine lace, which one would not use with homespun. Yet homespun has its uses and possesses decorative as well as utilitarian value.

Texture is only Form on a small scale. It is produced by the slight irregularities of surface ; by roughness, in fact. All the best brick textures are obtained by use of coarse sand with which the clay is coated, or with which the mould is sprinkled before throwing in the clot of clay. If a smooth-surfaced brick is required, as for gauged work, fine sand will be suitable. If a rough, varied surface is wanted, then coarse, sharp and even pebbly sand must be used. In this way bricks can be produced with any degrees of texture ; no two bricks will be alike, but all will be superior to bricks mechanically roughened, whatever the pattern. Much of the interesting character of early bricks is due to the coarse sand used.

¹ Hatched is the bricklayer's term for curved.

The third factor is Colour, but this does not lend itself to satisfactory illustration. It is the remarkable variety of colour which most impresses one when looking at Tudor brickwork. The general impression is of rich reds, but closer inspection shows deep reds, light reds, mauves, browns, blues and greys all built haphazard into the same wall. Such brickwork is a telling indictment of the modern brick, mechanically regular in form and colouring—the kind of brick which when built up as a wall, makes a red gash in the landscape and defies even the softening hand of Time.

The Report of the Royal Commission on Historic Monuments in Essex says :—

“The bricks used at Coggeshall Abbey of late twelfth and early thirteenth century dates, are of a warm red tone and generally from $1\frac{3}{4}$ to 2 inches thick; the fact that the majority of them are shaped to suit their present positions is an argument in favour of local manufacture. With the fourteenth century, the use of brick became more general in this part of the country . . . the brick of this period is of a much lighter shade, varying from red to a muddy yellow. The fifteenth and sixteenth century brickwork reverts to the warm red colour of the earlier work.”¹

The observations of this Commission were confined to Essex, but it is significant to note that the brickwork of Little Wenham Hall, in Suffolk, was largely of cream and muddy-yellow bricks, with a sprinkling of pinks and reds. Those at Allington Castle, in Kent, are pinkish in colour; and brickwork in the thirteenth century buildings at Salmestone Grange, near Margate, is similar to that at Little Wenham. However, we find the majority of the bricks at Dent de Lion (p. 116) a few miles from Salmestone, built in the fifteenth century, are chiefly creams and yellows. Possibly such differences in colours should be attributed to the character of local brick earths, rather than to period of manufacture. On the other hand the modern yellow Dutch clinkers are made from mud of the Scheldt. Early Flemish brickmakers who settled here may have used such material, and a percentage of chalk in the brick earths would produce the yellow colouring. Certainly there is a number of buildings near the East coast dating from the late thirteenth century and of the fourteenth century (the Commission quoted mention buildings at Colchester, Stanway All Saints and Fordham), where bricks are mostly pinky-red and muddy-yellow, and the point is certainly worthy of attention in relation to the question of imported or home-made early bricks. The fine colourings of the Tudor bricks continued, more or less, throughout the sixteenth century, and good reds (more

¹ “Roy. Comm. Hist. Monuments, Essex,” Vol. III., xxix.

regular in colour perhaps and less rough in texture) are characteristic of the early half of the seventeenth century. About the second quarter of the seventeenth century we find examples of impending changes as at Kew Palace (pp. 173-5), Raynham Hall (p. 179), and Tyttenhanger Park (pp. 187-9), which culminated in the time of Wren.

Gauged brickwork, of which we find a few instances in the second quarter of the seventeenth century, attained great popularity after the Restoration. It is not until the second quarter of the seventeenth century that we find examples of dressings executed with bricks of distinctly different colouring from that of the wallings. Bricks of lighter red colouring were picked out, or specially made, for such dressings. This had been the practice for many years before Moxon wrote :—

“The best earth which we have in England for making bricks is in the county of Kent, from which we have most of the bricks, which are rubbed and hewed for the ornaments of the chief fronts in the City of London; the ornamental parts of which fronts are done with the reddest bricks they can pick from among them and the rough or plain work is done with the grey Kentish bricks.”¹

The use of various reds, grey stocks and mauve stocks for wallings, with brighter reds as dressings, continued during the first quarter of the eighteenth century. In the second quarter we find paler and pinker wallings instead of reds, and an increasing tendency to use grey stocks, first those having, what Ware called “least of the yellow cast,” and later such pronounced yellows as malms. Ware writes :—

“Of the manner of using bricks. We see many beautiful pieces of workmanship in red brick; and to name one, the front of the greenhouse in Kensington Gardens will be sure to attract every eye that has the least curiosity; but this should not tempt the judicious architect to admit them in the front walls of buildings. In the first place, the colour is itself fiery and disagreeable to the eye; it is troublesome to look upon it; and in Summer it has an appearance of heat that is very disagreeable; for this season it is most improper in the country, though the oftenest used there, from the difficulty of getting grey. But a farther consideration is that in the fronts of most buildings of any expense, there is more or less stonework; now, one would wish that there should be as much conformity as could be between the general naked of the wall and these several ornaments which project from it, the nearer they are of a colour, the better they always range together . . . There is something harsh in the transition from red brick to stone, and it seems altogether unnatural; in the other the grey stocks comes so near the colour of stone that the change is less violent, and they sort better together. For this reason also the grey stocks are to be judged best coloured when they have least of the yellow cast; for the nearer they come to the colour of stone, when they are to be used together with it, always the better. Where there is no stonework there generally is wood, and this being painted

¹ “Mechanick Exercises,” Joseph Moxon, F.R.S., etc., London, 1682, 3rd edn., 1703.

White, as is commonly the practice, has yet a worse effect with red brick than the stonework; the transition is more sudden in this than in the other; but, on the other hand, in the mixture of grey bricks and white paint, the colour of the brick being soft there is no violent change."¹

It is obvious that Ware was determined to establish his objections to red brickwork, which he proceeds to do by these remarkable expressions of opinion. All the time it is clear he is conscious that existing buildings give the lie to his statements, and having, rather weakly, referred to the Wren "greenhouse" in Kensington Gardens (p. 201A) as "beautiful," he passes on, merely warning the "judicious architect" not to be tempted. One feels that the man himself wrote contrary to his own convictions, and that he was influenced by fashion, and fashion only. Ware's preference for brick near to the colour of the stone "ornaments" was anticipated by the builder of Hengrave Hall, Bury St. Edmunds (p. 146), in 1538, where much of the walling of the principal front is carried out in cream-coloured bricks, which are nearly the colour of the stonework.

The tendency to build with grey, cream and yellow stocks which became general in London and its vicinity was not unconnected with the development of Kentish and other brickfields where the available earths produced these colours, and here mention should be made of those bright yellow bricks, called Malms,² a good example of the use of which is the elevation of Bath House, Piccadilly, and which are still used for gauged arches, etc. When we go further afield, we find red bricks more largely used, the duller and paler colours as wallings and the brighter reds for dressings.

Another combination frequently seen in the country is the use of flared headers of silvery grey colour for wallings, with red brick dressings. The red bricks for these dressings are seldom of the brightest shades, often pale reds, and sometimes quite deep in colour. Calleva House, Wallingford (p. 227), has these grey bricks intermingled with dull, brownish reds. The house at Arundel (p. 252) has the centre portion in leaden coloured grey bricks, with red brick dressings, and the wings all red bricks. The house in the square at Wickham (p. 240) is built of silvery grey walling bricks, having considerable variety of tone and deep red dressings. The particularly soft colourings of these eighteenth century grey headers were,

¹ "A Complete Body of Architecture," Isaac Ware, London, 1756, p. 61.

² MALM. "A white marl containing an admixture of clay."—Jrnl. R. Agric. Soc., xii, ii, 481, 1851, "New English Dictionary." MALMS. "Workmen's term for Marle Bricks." "Outline of a Course of Practical Architecture." C. W. Pasley, Chatham, 1826.

perhaps, due to the fact that they were burnt in kilns with wood fuel. They were always headers, showing that these were picked out after burning, and no attempt seems to have been made to burn similar stretchers.

No. 45, Lincoln's Inn Fields (p. 242), built 1752, of grey stocks, without any red dressings, would be less interesting had not the designer rusticated the ground floor brickwork and emphasised the centre first floor window by surrounding it with an arch of the same bricks, projecting less than two inches from the face of the wall.

The house at King's Langley (p. 254) is of yellower brick, and dates from the Regency. The window arches and cills are plastered and painted white, as also is the woodwork of the doorway. The jalousies, ground floor window canopies, entrance door and iron railings are painted royal blue. How far this colouring is original it is impossible to say, but the association of royal blue with the yellow stocks has proved a particularly happy one.

Association with other Materials

BRICK has been used with every other building material, invariably to the advantage of that with which it was associated.

Like the Romans, the mediaeval builders realised the value of introducing Roman bricks amongst flint rubble and septaria in lacing courses and in units as at Colchester Castle (p. 101), where bricks are also used for quoins. The same use is made of these bricks at St. Botolph's, Colchester (p. 102), and also for the arches, which were afterwards to be faced with carved stone. At St. Albans Cathedral (p. 103) we have Roman bricks in courses, with rough flint, also in courses, as well as the all-brick external walling of the tower, etc. In each of these the use of brick was for structural, not for visual, reasons, and the surfaces were afterwards cement rendered.

Leaving Roman bricks, we find at Coggeshall Abbey the large thin twelfth and thirteenth century bricks used at St. Nicholas Chapel (pp. 105, 284) amongst the flint rubble and also for quoins and window dressings. At the rather earlier outbuilding of the same Abbey (pp. 104, 283) brick is used more freely for walls, windows and arches inside. At Little Wenham Hall (pp. 107, 359) the walls for five or six feet above the ground are built of stone and large flints (together with small pieces of each) in courses with angle buttresses of ashlar. At Tattershall Castle (pp. 109-110) and Caister Castle (p. 111) stone has been used for external dressings of windows, etc. At Hatfield (pp. 169-171) is Jacobean ashlar and brick. At Raynham, Inigo Jones combined brick and ashlar in his very distinguished elevations. In the East front (p. 179) the brick and stone wings compare not unfavourably with the stone central portion. It must not be supposed that in these and other important buildings brick was used with stone for economic reasons. Other details in the Tudor portion of Hampton Court Palace (pp. 137-8) witness that neither Wolsey nor Henry VIII. practised economy (a virtue never attributed to either), but it is apparent that they did appreciate stately building and the colour value of brick associated with stone. Sir Roger Townshend, for whom Inigo Jones

designed Raynham, so far from being a poor man, was famous for his munificence, and this building has been described by Sir Reginald Blomfield as

“The most distinguished example of seventeenth century domestic architecture in England. It is particularly refined and accomplished. Quiet, reserved and dignified in the highest degree, it stands by itself.”¹

It is in such association with ashlar, and as employed later by Sir Christopher Wren, that we have the highest development of the use of brick with other building material. In a sense, brick is subordinated to stone when all mouldings and ornaments are executed in the latter, but brick possesses in a high degree the attribute of displaying these to the greatest advantage.

The man who beyond all others realised this was Wren. To say that he handled materials is but faintly to express the way in which he mastered them, as may be seen in the following buildings actually by him or of his school. At Groombridge Place (p. 197) was used brick that was rough in form and texture, warm in colour, with thick joints. At Christ's Hospital (now demolished) (p. 196), the rougher wallings of the structure were contrasted with the fine rubbed and gauged work of the wings and pilasters in the Ionic order, with which the South front was divided vertically and whose capitals of gauged brick were built up and carved. At School, Winchester (p. 198), moulded and carved stone is shown off by brickwork of deep red and rough texture. In the Fountain Court at Hampton Court Palace (p. 201), finely jointed, rubbed, red brickwork is associated with the light and dark of moulded and richly carved Portland stone, producing the gayest effect. Such use of brick by Wren has been well described by Professor C. H. Reilly (when referring to the entrance to Middle Temple) (p. 195) in the following words :—

“The main wall face between the pilasters is in red brick, but what quality that red brick has! . . . How has Wren got such refined and delicate brickwork, rich in its slightly varying colour and yet smooth in its surface so that it accords absolutely with the broad stretches of stonework? He has done it by a method of which he was very fond; witness parts of Hampton Court, by using very small—about 6 inches by 2 inches, instead of the ordinary 9 inch by 3 inches—soft rubbed bricks, which can be carved like cheese and yet stand the London atmosphere. These bricks consequently can have the finest possible joint, indeed of a masonry character, so thin that it can hardly be seen. Such brickwork is of course a highly artificial thing, a mere facing. Ordinary brickwork is a conglomerate material like concrete, in which the cementing mortars should be

¹ “Hist. of Renaissance Architecture in England,” I., p. 118.

clearly shown. This rubbed brickwork of Wren's, however, is very beautiful as he has used it here and makes a fine field for his big pilasters. What scale, too, he gets by them! This small building, three hundred years old, masters, merely by its scale and simplicity all the modern ones around it, good as some of them are. It proves again the lesson that the chief fault of our modern street architecture is that we dare not be simple and broad; we dare not or are not able to give sufficient plain wall surface."¹

Amongst many fine country houses of the early eighteenth century, the designers of which are unknown, is Chicheley Hall in Buckinghamshire (p. 208). No wallings of mere stone could produce the brilliance which has here been attained. For richness of effect in form and in colouring it is unsurpassed.

An unusual combination of stone, flint and brick is the Post Office, Wickhambreaux (p. 164), a result achieved in two periods, of which the brickwork belongs to the later.

The Flemish practice of coating brick walls and moulded brickwork with plaster to represent stone was also in vogue in this country. Rendering walls of rubble or brick was practised in the twelfth century, but it is not until the sixteenth century that we find many examples of stone dressings simulated by plaster. Amongst many others are Layer Marney Church (pp. 132, 265); windows at Layer Marney Towers or Hall (p. 293); the gatehouse at Beckingham Hall (p. 157); the gardenhouses at Hales Place, Tenterden (p. 321); the doorway and windows of the Cale Hill stables at Little Chart (p. 270), where the door jambs and lintel are of stone, but the panel, pediment and ornament above are of plaster. At Stutton Hall (pp. 312-3) the Renaissance detail is plastered to represent stone, while the moulded brickwork of the earlier ornament is left in its natural state. At Eastbury House the principal doorway (pp. 271-2) is thinly plastered over the mouldings, etc., and the windows treated to represent stone dressings. One (p. 296) not restored is illustrated. The window at Goodnestone (p. 303) has additional interest because its sections are similar to the (re-plastered) earlier windows at Broome Park (pp. 176-8), a few miles away.

The plaster used as rendering to represent stone in early work was of two distinct kinds. On some buildings it consisted of thin mortar, often of sea sand and grit. This is used at Hales Place, Tenterden, and Cale Hill, Ashford, both in Kent. In some other localities the rendering was of

¹ "Country Life," 30th September, 1922, Vol. LII., p. 402.

almost pure lime putty, with hair mixed, as may be seen in most of the Essex houses. This latter treatment, of course, produced an effect of whiter stone than the sea sand would give. The treatment of the edges of such rendering is worthy of notice, see Breccles Hall (p. 163) as, also, the apparent absence of projection beyond the face of the brickwork, just as the stone it simulates would have been flush with the brick. Modern work and restorations often project half an inch or more and have clean cut splayed edges.

White, painted cement rendering over brick, and white painted woodwork (notwithstanding Ware's condemnation) have long been recognised as happily associated with red brickwork, as well as with bricks of grey and yellow colourings. The English designer has always realised the importance conferred upon his front elevations by a well-placed, well-designed entrance doorway. White, painted, wood doorways, with dark brown or dark green doors, were developed in this country during the second half of the seventeenth century, and during the whole of the eighteenth century, to much greater extent than on the Continent. The simplicity, bordering on severity which characterised the fronts of eighteenth century town houses (whether built of red brick or of grey stocks with red dressings) was relieved and given importance by the introduction of an entrance doorway in one or other of the orders. Examples may be found of all the five orders in doorways, but the Doric was most favoured, and it is remarkable to see the variety of ways in which this was treated. The hood over the South doorway at Tyttenhanger Park (p. 189) is an early example of such painted wood, the dating of which is assured by the treatment of the moulded brickwork to meet it below the brackets. Unfortunately the doorway, like the rest of the elevation, suffers from the aggressiveness of the heavy modern window frames.

Wren, with his fine perception of fitness, used red brick successfully with white paint. Morden College, Blackheath (p. 205), built 1695, is a notable illustration of this treatment. Built of red brick, the quoins and the band at first floor level are rendered with plaster and painted. The brick columns of the entrance doorway are similarly treated; carved and painted wood "ornaments," cornice, etc., are the same colour; the jalousies probably of green. It seems as though Portland stone were too costly, and it was desired to obtain such white effect as it might have produced after a half century's exposure to the weather.

The brilliance produced by use of white paint with brick was realised also by the early eighteenth century builder. Two houses will serve to illustrate this. No. 179, Clapton Road (p. 218), has rich red rubbed and gauged dressings, which contrast with the duller walling bricks. The white woodwork, green door, green iron railings and white stone steps combine in a brilliant whole, which contrasts favourably with the dull colourings of later eighteenth and early nineteenth century exteriors.

At Dedham, in Essex, is another house, built about 1732 (p. 236), with soft coloured wallings, rich red brick pilasters, cornice, niche and Ionic order (with white painted caps, bases and cill), window architraves and apron-pieces, contrasting with a green door and railings, the whole forming a delightfully gay and pleasing combination. The same treatment, often less fully developed, is to be seen in most houses of the late seventeenth and first half of the eighteenth century, many of which are illustrated. Of these, The Grange, Farnham (p. 209), is a quiet but original composition. No. 39, West Street, Farnham (p. 247), has an unusually handsome white, painted frieze. The painted pediment, cornice and capitals of pilasters at Finchcocks, Goudhurst (p. 228), are clearly substitutes for stone. The balustrades at Brick Alley Almshouses, Abingdon (p. 224), and in the parapet of the Old Hall, Ormsby St. Margaret (p. 238), are pleasing details, associated, as all are, with red brick of one shade or another.

We find cut and moulded brick still used in the country up to the middle of the eighteenth century, but it was dying out, and the use of gauged and rubbed work became confined to arches, quoins and other dressings, with which the severely bare fronts of grey and buff stocks were relieved. The classic revival killed brick manipulation; stucco became supreme. Only in the provinces was red brick still employed, and then as the plainest wallings and, perhaps, with brighter red dressings.

Manipulation of Brick

Bonds, Joints and Patterns

ON page 440, eleven walling bonds are shown, the first six of which are found in the old examples illustrated.

The early mediaeval brickwork was so irregular and often so intermingled with flint and stone that it cannot be classed under any system of bonding. Later, the Flemish type of brick, as used at Little Wenham Hall (p. 107), in the latter half of the thirteenth century, was built approximately in English bond (which we appear to have imported from France), but still very irregularly, and having a large proportion of stretchers on face. This has been called Flying or Yorkshire bond. It is the bond used at Beverley Bar, 1409-10 (p. 108), but at Tattershall Castle, c. 1431-49 (p. 109), the bond is definitely English, having fairly regular alternate courses of stretchers and headers. This bond continued in general use in this country until the seventeenth century, when we find buildings where Flemish bond (alternately a header and stretcher in the same course) has been used. Early instances are Kew Palace, dated 1631 (pp. 173-5), and Raynham Hall, built c. 1631-5. In the East elevation (p. 179) of the latter the pedimented wings are built in English bond, while the links between these and the centre are in Flemish bond. In the South elevation both English and Flemish bonds are found. Another pre-Restoration house built in Flemish bond is Tyttenhanger (pp. 185-7), built c. 1654. The evidence of these buildings disposes of the oft-repeated statement that Flemish bond was introduced after the Restoration. Wren used this bond, but did not confine himself to it. At Christ's Hospital 1672 (p. 196), the wallings are built in English bond, but at School, Winchester, 1684 (p. 198), at Hampton Court Palace, c. 1690 (pp. 200-1), and at Morden College, 1695 (p. 205), Flemish bond is used. This steadily increased in popularity, until in the eighteenth century it was the bond most in vogue.

English cross bond and Dutch bond, (also found in 15th century French castles) which are variations of English bond, produce the same

result (of making alternate courses of stretchers break joint) by different treatment at the quoins. Whole buildings are built in Dutch bond in Holland, but here its use is confined to limited areas, as the gables of Eastbury House, Barking (pp. 158-9), where the pattern of small crosses which they produce is discernible.

Heading bond was also in favour in the eighteenth century, not only for circular work like the water cistern at Rye (p. 217), and the quadrant returns of the wings at Finchcocks, Goudhurst (p. 228), but also for whole elevations, as at The Old Hall, Ormsby St. Margaret (p. 238). One writer regards this as "especially beautiful."¹ Another use of heading bond was when the whole wall surface was to consist of grey bricks. As these were the flared headers and as, owing to the method of setting in the kiln, stretchers were not produced this colour, the walling had to be in heading bond as at Wickham (p. 240) and Arundel (p. 252).

Monk bond, so largely used in mediaeval architecture in Germany and Sweden, and now so popular in the latter country, does not appear to have been adopted in Britain. This is the more surprising when the intimate relations between the Hanse towns and England is borne in mind. This bond consists of two headers and a stretcher in the same course. On a large expanse of wall it produces a pattern of zig-zags (rising seven courses), which like the crosses of Dutch bond, is particularly noticeable at some angles, and especially in certain lights. Being soft and unobtrusive, is not distressing to the eye (pp. 365, 440). If this bond is varied at the seventh course the pattern is avoided.

The thick joints of early brickwork were the natural result of the irregularity of brick sizes and shapes. The nature of the earths used and very thorough burning (we realise how thorough this burning was when we examine much old brickwork, without finding one brick which has succumbed to the weather), which resulted in hatching or warping. The consequent variations of dimensions often were not absorbed by the thick joint, so that perpends were ill-kept and sometimes cross joints came immediately over one another. This did not affect the strength of the walls ; so sound were the materials and work that a little laxity in method did not matter. An unpremeditated result, however, was to produce wall surfaces free from mechanical effect and rich in charming texture. Occasionally one finds the thick joints galleted with chips of flint (p. 360),

¹ "London Prices," Batty Langley, p. 130, London, 1749.

but this more frequently occurs in masonry. Details of brickwork at various periods are shown on pp. 357-61.

Brickwork of the first half of the seventeenth century was less variable, but retained the thick joint. The early examples of Flemish bond at Raynham (p. 179) and Kew (pp. 173-5) have more regular bricks and thinner joints. With Wren, the change became complete, and continued throughout the eighteenth century.

Batty Langley, writing in 1749,¹ describes the joints then in use and which had been in use for many years. He refers to bricks $2\frac{1}{2}$ inches in thickness, and says there are three varieties of "Common Front Walling."

"1. That whose courses are laid of the same thickness of mortar as Place Bricks usually are, viz., For every four courses in height, to rise one foot and jointed in the common manner.

"2. That whose Courses of Mortar are laid so much thinner than the preceding, as for every four Courses of Bricks to rise but eleven inches in height, and jointed as aforesaid.

"3. That whose Courses of Mortar don't exceed quarter of an inch in height and consequently every four Courses of Bricks to rise but eleven inches in height, as in the last, with tuck-and-pat joints."

There is another treatment ("rubbed and edged work") which he describes,² midway between common jointing and gauged work.

"Red Stock Fronts rubbed and edged only, with common jointed courses and with Tuck-and-pat courses. This kind of Brick walling, when well performed, is very strong and beautiful . . . there is Time expended in rubbing, to face them, and for just to sharpen their arraces."

He also gives instructions as to the composition of "inside" and "outside" mortars, one finer than the other; "the fine sort to the front courses and the other to the inside courses?" Two qualities of "inside mortar" are described, one made with loamy sand, the other with sharp gritty sand.³

After commenting on the fact that "tuck-and-pat" pointing nearly doubled the price of the work, he expresses himself as follows:—

"It has an ill effect and looks as if the Mortar had no union with the bricks and was forced from them. Neither is it so strong or so beautiful as when worked with their courses jointed in the common manner as all the rubbed red-stock fronts are done of His Grace the Duke of Marlborough's House in St. James' Park, built by that great architect, Sir Christopher Wren."⁴

¹ "London Prices," Batty Langley, London, 1749, pp. 91, 92.

³ *Ibid.* pp. 99, 32 to 40.

² *Ibid.* p. 126.

⁴ *Ibid.* p. 100.

Diapers

The art of producing patterns on wall surfaces by the use of bricks (generally headers) of distinctive colour seems to have been introduced from France during the fifteenth century. An early instance is at Herstmonceaux Castle, but only here and there in tentative fashion. The Bishop's Palace, Hatfield (pp. 117-9), has a variety of interesting patterns, and is the forerunner of the fuller development of such work in the sixteenth century. Continuous diamond patterns were most favoured; sometimes soft as at Rye House (p. 126), Gifford's Hall (p. 123), and Bradfield (p. 135), where the walls were covered with pattern, or, more rarely, in strong contrast to the background, as at Farnham Castle (p. 130). Such diapers gave scale to a building which could not be obtained by an unbroken area of such small units as bricks, their smallness being emphasised by the thick mortar joints. These patterns were produced by picking out overburnt headers, often quite vitrified, for the purpose. These were darker in colour than the rest of the brickwork; purples, blues, greys and sometimes almost black. Although often referred to as "black headers," they were seldom so dark. Owing to the excessive burning and consequent vitrification, they reflect light, and so photograph lighter in colour than the surrounding brickwork. Headers used for diaper patterns were not always of the colours mentioned. Sometimes deep red or brown bricks were used, and there was no attempt to obtain uniformity, any dark brick being chosen that would contrast with the rest of the wall. The result was that these diapers were not hard or mechanical looking, as are modern imitations, and often pains were taken to let the pattern die away here and there, and, perhaps, to reappear again. These patterns can be seen at Sandon Church (p. 129), Tolleshunt Major Church (p. 131), Hampton Court Palace (p. 138), Feering Church (p. 262), Layer Marney Church (p. 132), and elsewhere. At Feering the diapers low down are a soft grey, and become stronger in colour further from the eye. The buildings richest in this work are Layer Marney Towers or Hall (pp. 139-41) and Little Leez Priory (p. 154). Some of the work on these buildings is after the manner of Courcelles le Roi, but in none is there that riot of diaper in bands which is to be seen at Auffay (p. 439).

The Gateway at Dent de Lion, Carlinge, Thanet (p. 116), is built in bands of brick and flint, in courses of four of each. At St. Peter's, Thanet (p. 362), is a gable wall having extensive diamond diaper in flints, which have been knapped to the size of a brick header; and at Sarre (p. 362) is a gable, dated 1691, in similar flints.

In the eighteenth century blue headers were frequently built in Flemish bond, with red stretchers to produce a chequered effect. At Finchcocks, Goudhurst (p. 229), the whole of one elevation is treated in this manner; at Rainham, Essex (p. 232), the parapet only.

As the diapers and patterns used here were derived from those in vogue in France, examples are given from Chateau d'Auffay, Normandy, and from Boos Manor, Rouen (pp. 364, 439). At Chateau d'Auffay brick and stone courses are alternated freely and ingeniously, and the present effect must owe much to the softening hand of time. At Boos the diapers and patterns are used in panels, where weakness inseparable from breaking the bond would not affect the apparent stability of the structure. The extraordinary variety of patterns is shown in the photograph on page 364, and in the detail drawing on page 439. Such work has greater interest historically than as practical art applicable to modern requirements.

Inlay, Tracery and Strapwork

Inlay with small pieces of brick or tile, such as one sees in Holland, where tympana and panels are to be filled with decoration, does not seem to have been adopted in England. A simple example is the herringbone inlay in the arcading of the triforium at St. Albans (p. 387), of pieces of Roman brick. The early thirteenth century tesserae from Rochester Cathedral (pp. 432-6) show a variety of patterns. The pieces of tile have been cut to shape by hand. An essential feature of this work is the thick joint. Modern imitations of purpose-moulded pieces made under pressure in steel dies and laid with a thin joint compare most unfavourably with the old work. Both may be seen at Rochester Cathedral.

Herringbone work was not so uncommon as is supposed. The Roman pavement in the Forum at Colchester (p. 387) includes some, composed of small bricks, measuring 5 by $2\frac{1}{2}$ by $1\frac{1}{4}$ inches. There is a fifteenth century open fireplace at Cowdray Castle, Sussex, the lining of which is herringbone brickwork, and these are by no means exceptional

examples. At Salisbury is some fifteenth century walling in plain tiles herringboned in courses (p. 388).

Some fifteenth century buildings, and many of the first half of the sixteenth century, have strings and panels enriched with brick tracery, generally trefoils and quatrefoils. The tracery of the sunk panel at Ewelme (p. 115) is characteristic of work still to be seen on old buildings at Bruges. The panels over the fireplace from Prittlewell (p. 384) show the same Flemish influence. It is interesting to note how one cusped-brick mould was made to serve for the trefoils and for the cinquefoils. Another instance of panels may be seen in the old tower, b. 1437-9, forming part of the north front of Repton Hall, now the headmaster's house at Repton School, Derbyshire. The same economy of moulds may be observed in the panel tracery at Gifford's Hall (p. 123), West Stow Hall (p. 124), Colne Engaine Church Tower (p. 133), Layer Marney Towers or Hall (p. 291), and East Barsham Gatehouse (pp. 147-8). Two of these cusped bricks formed a trefoil arch in the panel at base of chimneys at Compton Wynyates (p. 429), and similar bricks are used for the piscina at Chignal Smealey Church, Essex. At East Barsham Manor House, Norfolk, are hexagonal panels, enclosing modelled tablets (p. 345), and the turret pinnacles are enriched by similar treatment (p. 151). The circular chimney at Methwold (p. 136) has diamond and zig-zag ornaments in relief. At Great Cressingham (p. 346) are panels of terra-cotta tracery, and at Hatfield the pierced parapets are of brick (pp. 168, 330), except for portions on the South side, which recently have been replaced in stone.

In the seventeenth century another form of raised decoration of wall surfaces, called strapwork, came into favour, examples are illustrated at Godalming (p. 191) and at Farnham (p. 368), of which also measured drawings are given (p. 426). An important consideration in relation to these simple projections, often of unmoulded bricks, is the amount which they project from the wall face. The square and circle work at Farnham projects $1\frac{1}{4}$ ins., but that in the small panels of the dated house at Godalming scarcely more than $\frac{3}{4}$ of an inch. It will be seen there that although some of this decoration projects from the wall face, that above the cornice is recessed.

Breaking wall surfaces by simple projections and recesses has always been a valued device of builders in brick, and there is almost no limit to the variety of ways in which this can be done. A broad and simple treatment is that adopted at the Ramsbury stables (p. 197), where vertical

divisions are formed by rusticated piers, rising to a simple corbel table and forming panels, in each of which is a handsome elliptic window of stone. Many country towns possess those severely simple brick houses, with rough block cornice and pediment of unmoulded brick, one course consisting of "dog-tooth" dentils or of ordinary dentils as the house at Arundel (p. 252). Sometimes special bricks called "cogging bricks" were made to ensure good bond.¹

Rustications of various kinds are further varieties of simple projections, sometimes assisted by the introduction of moulded imposts or key blocks. The doorway at Rye (p. 273) and gate piers near Canterbury (p. 328) illustrate these. The gable at Sarre (p. 203) has the whole face of the gable built in a plane very slightly in advance of the wall below, starting with a corbel of two courses. Below are rudimentary pilasters and sunk panels. The buildings at Gilton (p. 204), Reading Street (p. 202), and Bethersden (p. 207) include further applications of the same methods by country builders, who understood the material in which they worked.

Brick Moulding

Attempt was made in the last section to show important effects which may be produced by intelligent handling of ordinary unmoulded brick, effects which could hardly be obtained with stone without the intervention of the mason with his chisel. Brick is a material which also lends itself admirably to moulding and carving. The mouldings may be formed by shaping the clay in a wooden mould (now termed "purpose-moulding") or by cutting or by rubbing the burnt brick. All three methods have been employed from early times. At St. Nicholas Chapel, Little Coggeshall Abbey, c. 1220, the exterior of the East window (p. 284) consists of three lancet lights, enclosed in an outer order, all of brick. The dressings of the lights are plain chamfered, but the outer order has a hollow chamfer, cut by hand and exposing the dark cores of the bricks. The same window inside (p. 284) is plastered, but the bricks of the rear-arch are exposed. This is a moulded order of one roll, and the bricks are purpose-moulded and rubbed; other windows are similar. The arches of the Sedilia are built of bricks, the hollow-chamfers of which are hand cut, exposing the cores.

A doorway (p. 256) of the sub-vault of the Dorter of the Abbey

¹ Cogging Bricks, 10 × 4 × 2½. Used under coping bricks to project 2½ in. each side, diagonally, to make toothing or indented work.—"The City and Country Purchaser," R. Neve, London, 1703, p. 39.

(c. 1220) has a two-centred arch of two-moulded orders, of purpose-moulded brick. An imperfection in the mould can be traced by the same flaw in several of the bricks. No cores are exposed in any of the roll-mouldings, which, however, were finished by axe and rubbing. The lancet windows (p. 283) of the outbuilding (c. 1200) of the same Abbey have recessed jambs of two orders, splayed within; some of the bricks forming these are probably purpose-moulded.

At Little Wenham Hall, Suffolk, are large, moulded brick wall-copings, some of which are contemporary with the building (c. 1260-80), and others are Elizabethan renewals.

In the accounts of the building of the North Bar, Beverley, p. 108, 1409-10, the following item appears:—

“et Johanni Elward pro mille squynchon.”¹

Squynchons were specially moulded chamfered bricks used for jambs and arches. Bricks chamfered on two angles were used for vault ribs under the Bar. Both purpose-moulded and hand-cut mouldings are commonly found in later fifteenth century and subsequent work.

Until the latter half of the nineteenth century cutting bricks by hand was done with a brick-axe, and this kind of work is still often called “axed work.” The brick-axe is referred to in 1548-62. The tools given by a master to an apprentice at Norwich at end of term of the apprenticeship, which was nine years—“a hamer axe, a trowell, a bryckaxe, a square and a compass.”²

Forming mouldings by rubbing on a sharp grit-stone was another method employed either alone or in conjunction with axing. The mason’s contract for the building of Hengrave Hall, Suffolk, in 1538, provided the moulded chimney shafts should be rubbed, the wording being “roubed bryck all the schanck of the chymnies.”³

The brick-axe seems to have continued in use for brick cutting until the second quarter of the nineteenth century. Its form and use are described as follows:—

“A tool with two chisel-shaped ends, used by bricklayers for cutting bricks for gauged arches. The lines having been first marked on the brick by a species of small saw,⁴ the axe is taken by the middle and held in a perpendicular position; its edge is then applied to the brick where marked, and both being raised together, it is struck smartly on

¹ “The Building of Beverley Bar,” by Arthur Leach, F.S.A. Trans. E. Riding Antiq. Soc. IV., p. 31.

² “Norfolk Antiq. Misl. (1880),” II., 10a, p. 5.

³ “History and Antiquities of Hengrave,” by John Gage, 1822, as quoted by Parker. ⁴ Known as a “tin saw.”

a block of wood, by which the brick is cut into shape. The rough edges of the brick are then rubbed on a piece of grit stone.”¹

With this description is an illustration of a brick-axe similar to that of the Tylers’ and Bricklayers’ Company (p. 389).

The scutch or scotch (pp. 393-5) has quite supplanted the brick-axe ; indeed, I have been unable to find an old builder or bricklayer who recollects the brick-axe or its being used, although smaller axes for cleaning bricks were in common use until recent years. Experiments made with a brick-axe in the hands of a bricklayer who is expert in the use of the scutch show it to be far inferior to the latter in handiness, but the mediaeval workman was obviously possessed of a high degree of skill in its use. Recently the hack-saw (commonly used for cutting metal) has superseded the tin saw for making incisions, and has displaced the scutch for some brick-cutting. It is also used for cutting soft bricks. Skilled workmen, however, endeavour to keep this and other methods of brick-cutting secret, and are especially jealous that new recruits to bricklaying other than regular apprentices should not see them use these tools.

A list of tools is given by Moxon in 1703, together with instructions for using them, as follows :—

“ A Brick Ax (illustration as that on p. 389) with which they cut bricks to what shape they please, as some for arches, both straight and circular, others for the mouldings of architecture, as archytrave ; Friez and Cornice. A saw made of Tinn, to saw the bricks where they cut. A Rub Stone, which is round and is about 14 inches in diameter and sometimes more or less at pleasure, on which they rub the bricks, which they cut to several shapes and also others which they cut not, being called ‘ Rubbed Returns ’ and ‘ Rubbed Headers and Stretchers. ’ Some use a Float Stone, with which they rub the moulding of the brick after they have cut it with the ax, pretty near to the pattern described on the brick by the trammel from the wainscot or pasteboard mould, that so they may make the brick exactly to answer to the pattern or mould. Others use no stone at all, but cut the brick exactly to the pattern with their Brick ax, leaving the Ax strokes to be seen on the brick, which, if they be streight and parallel to one another look very prettily and is the truest way of working ; but then they must take care to ax the brick off with an Ax that is exactly streight on the edge that the moulding on the brick be neither round nor hollow from side to side of a header or from end to end of a stretcher.”²

The instructions given probably represent methods long adopted in brick-cutting, and are equally applicable to-day, except that the brick-axe has been superseded by the scutch. The “ tinn ” saw is still in use.³

¹ “The Dictionary of Architecture,” Architectural Publication Society, s.v. Brick Axe.

² “Mechanick Exercises, or the Doctrine of Handy-Works,” by Joseph Moxon, F.R.S., etc., London, 1703.

³ In “The Architectural and Engineering Dictionary,” by P. Nicholson, London, 1835, it is stated that the tin saw is first used to cut lines $\frac{1}{8}$ in. deep, “that the axe may enter and keep the brick from spaltering.”

It consists of a piece of thin sheet metal in a wooden handle, with which a shallow line is scored in the brick to the required outline. The scutch is a more accurate tool than the brick-axe, and now, as with the axe in Moxon's time, a skilful workman will cut mouldings with it alone. When Moxon refers to a mould he means a template of the moulding to be cut.

As at the present day, the old builders, no doubt, prepared purpose-moulded bricks, when a large number were required, but there was also much axed work, probably because a skilful workman could mould, by cutting, a considerable number of bricks in a day. It may give some idea of time required if mention is made that the 7-inch bricks in the illustrations of brick-cutting (pp. 393-6) were moulded by scutch and rasp alone at the rate of seven an hour. The returns, which were left square at one end, requiring greater care, took fifteen minutes each. Had a large number been required, probably the output would have been twenty per cent. more. It is therefore apparent that where many moulded bricks were required, as for several window architraves, it would pay to have them purpose-moulded, but for a smaller number it might be more economical to axe by hand. Where work was far from the eye, often less care was taken than where near the ground. An instance is the top of the main cornice moulding at Willmer House, Farnham, which Mr. C. S. White (who measured it from ladders) informs me is well preserved, but that projections of individual members vary considerably—in some cases as much as three-eighths of an inch in a length of three or four feet of cornice.

Such were the methods (together with carving, which will be treated later) by which builders shaped their bricks up to the second quarter of the nineteenth century. The illustrations of buildings and of details up to this date are worthy of careful study as being the work of men whose fertility of imagination and resourcefulness enabled them continually to vary old devices and to produce fresh combinations, always happy in design and satisfactory in proportion. Study of these is helpful to the student and designer, but to wrest details from these old buildings and re-assemble them can produce no better architecture than that of the late nineteenth century revival of brick building which did so much to discredit brick as a building material.

Gauged Work

Up to about the year 1630 brick was fashioned by purpose-moulding, by rubbing or with the brick-axe, and the bricks used were hard bricks. In early arched brickwork the bricks were not cut accurately as voussoirs; the difference between the curve of extrados and that of the intrados being taken up in the joints. Where this would have resulted in too thick a joint, a piece of tile was inserted or a wedge-shaped piece of brick, after which the use of ordinary bricks was continued. For the small curves of Tudor arches, rough voussoirs were cut. Occasionally early work is seen where voussoirs have been cut with some care, as in the inner arch of the gatehouse at Gifford's Hall (p. 123), but the bricks vary much; the error in one being rectified by increasing or diminishing the next. In gauged work the exact shape of each brick is carefully set out beforehand and strictly adhered to by the cutter. The difference between rough and gauged arches may best be realised by comparison of the Gateway at Breccles Hall (p. 315) and the Doorway at No. 3, King's Bench Walk (p. 277). Reference has been made already to the change in thickness of joints about this time. Hitherto they had seldom been less than half an inch thick, but improved and more regularly shaped bricks, together with changes in fashion, in the course of the next forty years, reduced this for some classes of work to less than one-eighth of an inch, and to facilitate this accurate jointing softer bricks were eventually used which could more easily be rubbed down. The change was gradual, an early example being Kew Palace (p. 299), dated 1631, where the jointing scarcely exceeds a quarter of an inch and where key blocks and capitals are built up with the finest possible joints after accurate gauging. The Gateways at Chesterton (p. 317) and Forty Hall (pp. 318-9), both ascribed to Inigo Jones, are undated examples of early gauging. Cromwell House (pp. 185-6), built about 1650, has much cut, rubbed and gauged work, while Tyttenhanger, c. 1654 (p. 187-9), which has features in common with Cromwell House, and may be by the same hands, has the gauging more finely done. The brickwork of the fine gauged gate piers at 59-60, Lincoln's Inn Fields, attributed to Inigo Jones (and so often regarded as early gauged work), must be of much later date than these examples. It is certainly of post-Restoration character; indeed, it has been suggested that these piers

were removed and re-created in their present positions when the premises were divided in 1751-2.¹

A result of finer joints and to a greater extent of gauged work was to nullify the lack of breadth caused by so small a unit as a brick when its smallness was emphasised by a broad border of mortar joint round each. Wall surfaces became more homogeneous, and what they lost in texture was more than compensated for by the greater attention bestowed upon the execution of dressings, whether of other coloured brick or of stone. It is evident that rubbed and gauged work did not come in with the Restoration, but was already as well established here as the unsettled conditions of civil war would permit.

On the 29th April, 1667, an order was made by the Lord Mayor, Aldermen and Common Council of the City of London, which is given in full on page 47, respecting the use of rubbed bricks and other enrichments of the fronts of buildings, showing the practice was not a new one. Such work increased rapidly in popularity. Allusion has already been made to Sir Christopher Wren's use of it at Middle Temple Gateway and at Hampton Court Palace, c. 1690 (pp. 195, 200-1), Christ's Hospital, 1672, also by Wren, has been demolished, but a portion of the front is illustrated (p. 196). His fine doorways in King's Bench Walk are well known, but cannot be omitted (pp. 277-9). That at No. 4 is dated 1677.

The dominating feature of brickwork of the second half of the seventeenth century and first half of the eighteenth century was the use of cut and moulded brick for cornices and pilasters. Kew Palace (p. 175) is an earlier instance, and there we have three orders superposed. At Broome Park, Kent (p. 176-8), the treatment is more simple, the scale is good, and the pedimented treatment of the attic confers distinction. Pocock's School, Rye (p. 181), shows adaptation of the Tuscan order to brick. Sir Reginald Blomfield says of this :—

“The designer made no attempt to adhere exactly to the orthodox rules of the Tuscan order, the order which he followed approximately. He subordinated his order to the exigencies of his brickwork, that is, he designed all his mouldings with a view to their safe and easy execution in coarse jointed brickwork, so that each course is securely bedded and has sufficient bearing in the wall. Yet the work is by no means ignorant. All the members of the order are there, in suggestion rather than in literal transcript, and, as in the case of a good many buildings of this date in England, whose architect is unknown, this building was evidently the work of a strong and original designer. The arches over

¹ “Survey of London,” Vol. III., “The Parish of St. Giles in the Fields,” London, 1912, part I., p. 98.

the windows are straight brick arches, channelled to form voussoirs and key-blocks. These are of rubbed brick, but coarsely jointed.”¹

Close examination of the work confirms this description. It is astonishing to find how few moulded members there are, and how much has been accomplished by use of bricks of varying thicknesses and of tiles varying from half to one inch in thickness. A detail drawing is given of the central dormer and of the pilaster caps from measurements taken from a ladder (p. 418).

At Barnham (p. 184) is another front in cut brickwork in two orders. Cromwell House (pp. 185-6) is one of the most refined specimens of moulded brickwork extant, exhibiting such exceptional knowledge and ability that it is surprising the exterior should have escaped any of that attention which has been lavished upon the staircase. Scale drawings and full-size details accordingly are given (pp. 398-402). Mention should be made also of Tyttenhanger Park (pp. 187-9), possibly from the same hand. Christ’s Hospital (p. 196) shows finer gauged work by Wren, and the Bluecoat School, Westminster (p. 199), which is attributed to him, includes great variety of detail. The front of the Unitarian Chapel at Bury St. Edmunds (p. 211) by an unknown architect, combines gauged, cut and rubbed brick, which produce a fine building, probably the most distinguished architectural feature in the town. Pallant House, Chichester (p. 212), is another attributed to Wren, but there is no evidence connecting it with him, and its only claim to such parentage is the fine quality of its design. Cut brick cornices such as this and many others were made from bricks of normal dimensions, as may be seen in the return section of that at West Farleigh Hall (p. 366), but Moxon (1703) says :—

“The length of a brick being about eight inches, when its head is rubbed for hewing, it will not hang if it fall over more than is shown in the draught, which is about three and a half inches. But if you would make it project more, then you must cement pieces to the ends of your bricks for tailing or to make them longer.”²

The bricklayer, Venturus Mandey, whose epitaph is quoted on p. 15, seems to be the Venturus Mandey who produced a book with Joseph Moxon as joint author. If so, Moxon probably got his information regarding bricklayers’ work from Mandey.

At Bradmore House, Hammersmith, the main cornice was of brick

¹ “Renaissance Architecture in England,” p. ii., p. 356.

² “Mechanical Exercises,” by Joseph Moxon, F.R.S., etc., London, 1703.

and had projection of $19\frac{1}{2}$ inches from the wall face. The corona brick of this cornice was 18 inches long, so was well tailed in.¹

Possibly the builder of the scanty block cornice at King's Langley (p. 249) lacked confidence in his ability to tail in. Bradbourne (p. 213) is of approximately the same date as Pallant House, and like the house in Longbridge, Farnham (p. 220), includes skilful gauged and carved brickwork. Willmer House (pp. 222-3), in the same town, like Cromwell House, is an outstanding production of its period and worthy of the detail and full-size drawings, upon which Mr. C. S. White has expended so much care. It is about this time that Calleva House, Wallingford (p. 227), and Lockleys, Welwyn (p. 221), were built; very different handlings of the Doric order; another version of which, built later still, is Church House, Beckley (p. 239). The house at Hertford (p. 225) is an excursion into the Ionic order, and that in Tooks Court (p. 226) into the Corinthian (all in cut, rubbed and carved brick), rarer because more difficult of execution. Indeed, the Doric order is the favourite, and is to be found in many counties. The culminating point of excellence of design and perfection of execution in such work is achieved in the pediment from a house at Enfield, now in the Victoria and Albert Museum (p. 368), every part of which is built up of ordinary bricks.

It will be seen that the angle bricks of the window architraves at Willmer House (p. 406) are large purpose-moulded bricks, having the representation of a thin joint at the mitre incised, shewing recognition of the fact that the effect of brick units should be preserved and that the introduction of larger pieces is disfiguring. The same angles of the architraves at Kew Palace (p. 299), Cromwell House (p. 302), and Tyttenhanger (p. 302) were built of cut brick units. Such architraves, however, were the exception, but many buildings were built with red stock dressings, and also with red stock wallings. Batty Langley (1749) describes

“ Plain walling, with rubbed and gauged red stock bricks, set in putty ” as “ of all others the most beautiful.”²

Of brick ornaments he says they are

“ of various kinds, viz., Rubed only, and set in Front Mortar; or gaged, rubed and set in Putty. Those which are rubbed only are chiefly the sides or jaumbs of Windows and the external angles or quoins of buildings.”³

¹ “ Survey of London,” Vol. VI., “ The Parish of Hammersmith,” pl. 14.

² “ London Prices,” Batty Langley, London, 1749, p. 130.

³ *Ibid.* p. 286 *et seq.*

Later he particularises

“Gaged and Rub’d Brick Ornaments . . . worked flush and having projection,”¹
as friezes, window arches, fascias, architraves, rustics, beads, pilasters, shafts, etc., etc.

A modern definition of gauged work is that it

“consists of rubbing and cutting to any required shape, specially made bricks or ‘rubbers,’ as they are technically termed.”²

In the mid-eighteenth century gauged work was the term applied to work where

“the workman must gauge or rub down the Red Stock Bricks; so that every five courses of them shall come level with every four courses of Place Bricks, worked up with them, with inside.”³

A similar bond was obtained between pilasters or quoins and wallings.

The object of the rubbing was to bring the bricks all to the same size, with sharp arrises, so that they might be laid with thin joints, as dressings, etc.

At Bradbourne (p. 361), d. 1714, the gauged pilaster, in two colours of brick, bonds with the wall, every seventh course.

As defined above, the term “gauged” includes rubbing and cutting the special soft bricks to shape, as voussoirs and mouldings. The tools used for cutting hard bricks could be used, but much of the work was done by rubbing with a grit stone and cutting with a bow saw, having two wires twisted in place of a toothed blade. During recent years this saw has been abandoned in favour of a hacksaw, which is well adapted to all brick-cutting. Where a number of bricks have to be dealt with, wood boxes of the required shape are made, in which the brick is placed to guide the cutter. The soft bricks made for this purpose (containing a larger proportion of sand than ordinary bricks), if properly made and burned, are durable, withstanding the weather and even the London atmosphere. They are easily rubbed, cut or carved.

¹ “London Prices,” Batty Langley, London, 1749, p. 288.

² “Bricklaying and Brickcutting,” H. W. Richards, London, 1901.

³ “London Prices,” Batty Langley, London, 1749, p. 130, sec. 7: “Of Plain Walling, with rubbed and gauged Red Stock Bricks, set in Putty.” p. 13: “Red Stock Bricks, commonly called Rubbing Bricks.”

Carved Brick

Brick carving has been practised from early times, and bricks of the soft cheesey type are well adapted to this purpose, indeed, the material itself suggests the treatment. At East Barsham the evolution is apparent. Over the doorway of the house itself (p. 149) is the coat of arms of Henry VII., carved in stone. Over the archway of the Gatehouse (p. 147), built several years later, are the arms of Henry VIII., carved in brick. The brick is built in lumps, rising three or four courses of the ordinary brick of the walling. It has evidently been carved *in situ*, and the same treatment has been adopted for the janitor figures on each side of the arch and for the arms and other details over the arch on the other side of the Gatehouse (p. 148). At Great Snoring (p. 125) the tracery of the turret was probably carried out in the same fashion. Stone and brick have suffered equally, where they could be reached from the ground, but where sufficiently high to be out of reach of mischievous persons, the carving is well preserved. No effort has been made to break the lumps of brick by representing joints, as would have been done at a later period, and where the brick has been carved back to the wall face the effect is not pleasing. Builders of the seventeenth and eighteenth century avoided this mistake by building up soft brick for carving in ordinary brick units, with very fine joints, the bonding of which must have called for considerable forethought and ingenuity to avoid exposure of vertical joints on face where carved back. The Ionic and Corinthian capitals at Kew Palace (pp. 175, 368) are treated in this manner, though somewhat crudely. The volutes of the centre windows at Cromwell House and Tyttenhanger (p. 302) are good instances ; the Corinthian capitals at Took's Court (pp. 226, 411) and also the cornice modillions are carved, the former of bricks built up, the latter of large brick lumps, while the pediment from Enfield (p. 304) has brackets, swags, amorini and capitals all carved in brick, built up with "invisible" joints. The bonding of the detail of the capital on page 368 is worthy of study. Other examples of carving are the doorway at Farnham (pp. 281, 424), the escutcheon and key-block over the niche at Abingdon (p. 325), and many similar details in other illustrations and tablets such as that at Yalding (p. 385). Attention may be drawn to the carving of the spandrels at Little Lee Priory, c. 1536 (p. 268), and of those at No. 4, King's Bench Walk, 1677 (p. 278), both carved back into the brickwork, also to the finials of the doorway at Eastbury Manor House (p. 272), which are uncommon.

Corbelling, Chimneys

Perhaps the most notable achievement by the brick-builders was their successful manipulation of corbels and, indeed, of projections of every kind. The earlier corbels, as at Tattershall (p. 110) and Caister Castle (p. 111), depended more upon the varying of brick thicknesses than upon mouldings. Later, in the fifteenth century and well into the sixteenth, more elaborate work is found (p. 333), only to pass into more simple forms as the corbel tables (which represented, formally, the practical machicolations) died out. Angle corbels of many designs continued to be built (p. 334), and simply contrived corbel or eaves courses were useful elements in the stock-in-trade of the eighteenth century workman. The importance of sufficient but not excessive projection is particularly obvious in chimney caps, where the slightest excess in the projection of sailing courses is emphasised against the sky. A projection of 2 inches on face becomes $2\frac{7}{8}$ on the angle, which would be too great, even where thin bricks are used. Few of the cap profiles given on page 427 exceed $1\frac{1}{2}$ inches in the projections of the unmoulded sailing courses. Had the bricks exceeded $2\frac{1}{4}$ inches in thickness, or had the shafts been slighter, even $1\frac{1}{2}$ inches would have been too great.

Chimneys of Henry VIII.'s reign were richly and elaborately decorated with cut and also with purpose-moulded bricks. Great ingenuity was shown in the variety of spirals, of which many examples exist, as at Aston Bury, Herts (p. 339A), and Titchfield Place, Hants. The convenience of brick as a material for building every description of chimney shaft is manifest in the number of stone buildings where bricks must have been brought from a distance for the chimneys. The fine chimney at Thornbury Castle (p. 343) is an instance ; other brick chimneys on stone buildings are at Hengrave Hall (p. 146), St. Osyth's Priory (p. 341), and Bateman's, Burwash (p. 336).

Spiral and other brick chimneys in the fashion of those at Stutton Hall (p. 339), Lee Priory (p. 342), and Buckingham (p. 341), are widely distributed. Those at Aston Bury (p. 339A) are shown before restoration; the illustration brings out clearly the detail of the moulded work and of the spurs. The fine chimneys at Plaish Hall, in Shropshire, are of these types. The story of their construction is a tragic one. When Judge William Leighton (at that time Judge of Assize at Shrewsbury) was building the

house, he enquired of the Sheriff at Shrewsbury whether there was in the neighbourhood a workman skilled in building these brick chimneys. The Sheriff replied that the only man he knew was one just sentenced to death by the judge himself for sheep stealing. On hearing this, the judge had the wretched man removed from his cell, taken to Plaish, and set to build chimneys. When this work was completed, he was returned to the place of execution, where, as the historian puts it, "the judge made his neck to crack."

The judge's enquiry shows that he hoped to find local workmen, and desired to have the ornamental chimneys constructed by them rather than import artizans from a distance. Apparently too (as might be expected) such workers in brick were limited in number in a stone county.

Gateways, Garden Details, etc.

The gateway was the immediate successor of the gatehouse. In the latter part of the sixteenth century it was no longer necessary to house a guard, but only to provide convenient access to the court or other enclosure attached to the house. The opportunity of emphasising such entrances was seldom overlooked; and although later an entrance might be little more than a door in a wall, the sixteenth century gateway was second only in importance to the gatehouse it superseded. Typical examples are shown from Beverley (p. 308), Sturry (p. 309), Tenterden (pp. 310-11), Stutton (pp. 312-13), and Brook Farm, Chislet (p. 314). That at Hales Place, Tenterden (p. 311), is shown at several angles to exhibit the cut brickwork, the projections and the treatment of each elevation. The gateway at Stutton Hall gives entrance into a walled garden. The wall crenelations are weathered, and at regular intervals cut brick pinnacles similar to those on the gateway rise from the walls. The gateway itself is a study in evolution from old to new styles. The external elevation is mainly Gothic in design and detail; a stepped gable between pinnacles of cut brickwork, and a four-centred arch, but this latter springs from rude capitals, which with the cornice are suggestive of the coming change. The garden elevation retains the pinnacles, but in other respects is frankly Renaissance in character. The stepped gable is replaced by a semi-circular pediment, the semi-circular arch springs from rude Tuscan

capitals, and the flanking piers are replaced by coupled pilasters, which support an entablature. The designer is still not very confident of his mouldings, and the arch is moulded with an ovolo instead of an architrave. In both elevations the work in the new manner is plastered to imitate stone. It would be difficult to find a more interesting instance of an attempt to embody new fashion with old methods. The gateway at Chislet (p. 314) includes a rude attempt to introduce columns and a triangular pediment. This unlearned design is redeemed by its material and the quality given it by its cut brick workmanship.

At Arwarton (p. 316) is a late sixteenth century gateway. At Breccles Hall are two gateways (pp. 315-16), both mutilated, but both having interesting detail. The larger one has lost the finials, which must once have flanked the "bullseyes." The treatment of the arch shows the introduction of wedge-shaped bricks at intervals to take up the thickness of the joints, to which reference has been made.

The gateway at Chesterton (pp. 317, 412) is attributed to Inigo Jones, and is certainly a fine piece of work, which, like that at Forty Hall (pp. 318-9), also ascribed to him, is in his manner, and shows that appreciation of light and shade and ability to produce broad and dignified effects by simple means which are characteristic of his work. The doorways at Spalding and Barnham (p. 320) are simple treatments of wall openings.

The garden houses at Hales Place, Tenterden (p. 321), are at each end of a raised terrace at the foot of the garden. The garden is enclosed by a low wall, which originally was of considerable height. The windows, now bricked up, have mullions of ovolo section. They and the attenuated columns were rendered with plaster of sea sand. The garden house at Roydon Hall (p. 322) is also one of two on a raised terrace. At Killigrews, Margareting (p. 323), the wall within the moat has brick turrets at the angles, evidently to shelter one man on guard, and furnished with cross loops in four sides of the octagon.

Three niches are illustrated, one from Hampton Court Palace with one from Finchcocks (p. 324), and the beautiful niche, in an order, of Carswell at Abingdon (p. 325). A good example of a gauged and carved brick niche (c. 1700) from Bradmore House, Hammersmith, has been re-erected in Geffrye's Garden, Kingsland Road.

A country-built but effective brick gate pier is illustrated from Tenterden (p. 326), and a drawing of the wall with its large purpose-moulded

coping on page 430. Rusticated piers are shown from West Stow (p. 327) and Canterbury (p. 328), and a simple one, with brick steps, from Northiam (p. 329).

The pierced parapet at Hatfield has been applied to dwarf garden walls (p. 330). Some of these are moulded in fine material as terra-cotta; others of coarser earth, which includes small pebbles. The wall illustrated is well designed and carried out, and the cornice coping most satisfactory. The pier panels are pulvinated. The wall coping at Morden Hall is a good example of a type often seen (p. 331); a drawing is given on page 430. Other purpose-made copings are shown on page 432.

Although not used as coping to a garden wall, the plain tile coping on the thirteenth century gable at Salmestone Grange, Margate (p. 388), is notable. Several gables are treated in this fashion, which is probably not earlier than sixteenth century work.

Porches, Doorways and Windows

It has been said that brickwork "has not had much influence on the design of doorways of any pretensions."¹ Not only, however, does brick lend itself to the execution of forms also carried out in stone or timber, but it impresses a character and quality peculiar to itself. The Saxon doorway at Colchester (p. 255) is certainly not less pleasing than it would have appeared if outlined in stone. The vaulting and doorway at Coggeshall Abbey (p. 256) might have been carried out in stone or brick; the design cannot be said to have been influenced by any material. The brick archways and doorways of the fifteenth and early sixteenth centuries followed their stone prototypes; and at East Barsham (p. 149), as already pointed out, we actually have the doorway to the house of stone with carved arms in stone over it, and the same idea carried out a few years later in brick at the gatehouse entrance. The differences in form of arch, in orders and mouldings, are differences of time, not changes necessitated by material. The porches of such Essex churches as Pebmarsh, Sandon, Feering and Layer Marney (pp. 260-2, 265) possess a sturdy ruggedness which has its own charm, and they have qualities of texture and colour which no stonework possesses, while in Kent the porches at Tenterden (pp. 269, 422), Gilton

¹ H. Tanner, in "Old English Doorways," Batsford, London, 1903.

(p. 423), and Old Charlton Church (p. 276) show practical handling of brick at different periods, which, provided bricks were used having the same texture and colour, would be equally pleasing to-day. Four centred doorways are represented in brick from Layer Marney (p. 264) and Barking (p. 271-2), and in terra-cotta from Sutton Place (p. 266). The semi-circular doorhead at Rye (p. 273) is an early instance of roughly gauged rustications, which, placed between two pilaster pedestals, is an impressive portal. Often seventeenth century brick doorways, like that at Barnham (p. 275), have been replaced by Georgian, painted, wood porches or doorways, but excellent specimens of finely gauged doorways remain, of which illustrations are given from King's Bench Walk, Temple (pp. 277-9), Hertford (p. 280), and Farnham (p. 281); the last an uncommon design, as is that at Richmond (p. 282).

The brick windows of the outbuilding (p. 283), of Coggeshall Abbey, have narrow lancet-shaped lights, deeply splayed to light as widely as possible within, of a type we associate with churches. In the twelfth century and long afterwards, however, there was not that sharp line of distinction drawn between sacred and domestic architecture, which we now recognise. The windows of St. Nicholas Chapel (p. 284) are described under mouldings. The mullion brick from a destroyed window at Great Snoring (p. 285) is reminiscent of contemporary mouldings in stone and oaken windows. Another window much restored at the same house (pp. 286, 414) has been chosen for a measured drawing, as also have two at East Barsham (pp. 415-16). The windows at Small Hythe Church (p. 288) are filled with tracery in the Flemish manner, rare in England. The oriels at Faulkbourne (p. 112) and Rye House (p. 289), together with the corbel tables, must be by the same hand. Mullions having full rounded sections, like the ovolo, which is so frequently used in stone and oak, often look clumsy in brick, probably because the frequent horizontal joints exaggerate their thickness. Plain and hollow chamfers are particularly suited to brickwork, and are found in much sixteenth century work, the former at Sandon and Feering Churches (pp. 261-2), and the latter at Layer Marney (pp. 290-293) and Chignal Smealey (p. 290) and later at Eastbury Manor House (p. 296). The windows at Slyfield Manor (p. 297) are shown for their uncommon labels. The upper window frame is of wood, having carved rustications and pendants of similar design to those on the brick pilasters below. The window at Goodnestone (p. 303) is of the same

section as those at Broome Park (restored) (pp. 176-8), built thirty-seven years before. A number of good houses of the mid-seventeenth century have brick windows with architraves as at the Garden House, Old Charlton (restored) (p. 298), Balls Park (p. 301), Cromwell House (pp. 301-2), and Tyttenhanger (p. 302). The last two have centre windows accented by carved volutes. Such windows were succeeded by gauged arches, semi-circular, semi-elliptic and flat, as at The Grange, Farnham (p. 307), Church House, Beckley (pp. 307, 421), and Pallant House, Chichester (p. 307), where the keys are carved and soffits are cut serpentine. Willmer House, Farnham (pp. 222-3, 406), has window architraves of exceptional quality. Several forms of rustication are used at Bradbourne (p. 305) and Sawbridgeworth (p. 307). Venetian windows, as those at King's Langley (p. 249), are general, but two at Colchester, one of which is shown (pp. 306, 420), with detail drawing, are exceptional in treatment.

Stairs, Vaultings, Arcading, Fonts, Fireplaces, Tablets, Pinnacles, etc.

The earliest stairs were rough work of the central newel type, like that at St. Botolph's (p. 369), a development of which is seen in the stairs at Laughton Place (p. 372), where each stair is carried on a rough arch. Much better finished work is seen in the staircases at Faulkbourne Hall (p. 371), and at Oxburgh Hall (p. 370) (which must be by the same workmen), where the stair soffits form one spiral vault built in cut and rubbed brick, a triumph of setting-out and craftsmanship. Each of these stairs has a moulded brick handrail in the outer wall, such as may be seen elsewhere in buildings dating well into the sixteenth century, as at Eastbury House, Barking (p. 159).

Brick vaulting, c. 1220, exists at Coggeshall Abbey (p. 256) and within Beverley Bar, Yorks., 1409-10. It is found in many fifteenth century buildings. There is a bay window at Faulkbourne Hall, Essex, with ribbed vault in moulded brick and one similar at Oxburgh Hall, Norfolk. The porch at Feering Church is also vaulted and a corbel is shown on page 334. Perhaps the most remarkable of all are the vaultings at Tattershall Castle over the second floor corridor and over the third floor lobby (pp. 373-4). The latter has armorial bosses at the intersections of the ribs.

Many churches of late fifteenth and early sixteenth century have brick arches and arcading. Perhaps that in St. Osyth's Church is the most impressive, although the chancel arch was never completed. The illustration on page 376 is of the North aisle. At Chignal Smealey Church (p. 377) is early sixteenth century arcading north of the nave and a fine brick arch at the West end. The passage within the gatehouse at West Stow Hall (p. 378) has arcading of another kind, having split columns of Renaissance character on the piers. The brickwork is of bricks only $1\frac{1}{2}$ inches thick. The arcading of the cloisters at Wye College (p. 379) is simple, but produces a remarkable impression of repose and dignity. Chapel Viaduct, near Earls Colne (p. 380), built in 1847, though not of any antiquity, is an outstanding example of how charming a purely utilitarian structure may be if well designed. This viaduct possesses much of the quality of Roman aquaducts in its picturesqueness.

Resourceful craftsmen have often shown the adaptability of brick. Mention has been made of the gauged brick tomb at St. Peter's (p. 356), and there exist at least three fonts made of brick. There is a very simple one at Chignal Smealey (p. 377); an early stone font on a sixteenth century brick stem in the church at Bradwell, near Coggeshall (p. 381), which is an excellent piece of design and workmanship, and a more ambitious fifteenth century brick font at Potter Heigham (p. 382), which has suffered from restoration.

Brick fireplaces generally had four-centred or elliptical arches, moulded on the chamfer. Those illustrated (p. 383) are of fifteenth century date, but are typical of many others, also, in the next century. It is seldom that these fireplaces have brick mantels over the arches, but a stone lintel from Prittlewell, in the Victoria and Albert Museum, of the fifteenth century (p. 384) is surmounted by cusped panels of Flemish character, and over them a crenelated moulding, all in cut brick; the effect of which is so satisfactory that one regrets the scarcity of similar work.

Brick date-tablets are frequently seen on seventeenth and eighteenth century houses, usually of simple form, as sunk panels. The little order and pediment at Yalding (p. 385) is a more ambitious effort, executed entirely in cut and rubbed brick.

The labels over the archways at Gifford's Hall are returned in lozenge-shaped, raised panels, enclosing a carved rose (p. 385), all contrived from the ordinary bricks used.

At Gifford's Hall also are crocketed brick pinnacles (p. 123), where brick-on-edge courses are interspersed with the ordinary brick laid flat to reduce the number of horizontal joints. At Kew Palace (1631) (p. 368) brick on end is used for shafts of columns with the same object. The turret finials at East Barsham Manor House (pp. 147-51) are rich in cut brickwork. A detail is given also of the pinnacles at West Stow Hall (p. 386), which are not unlike those at Gifford's Hall, but are surmounted by terra-cotta figures.

Examination of the illustrations and measured drawings will reveal many other examples besides those to which reference has been made, but even these do not exhaust the ways in which brick can be successfully used. It may prove, however, that those given fairly exhibit the variety of purposes, the adaptability of the unit, and the scope for design and craftsmanship which lie dormant in what those who are ignorant of its qualities so frequently term "common brick."

TABLE OF BRICK MEASUREMENTS

Arranged according to thickness

c = circa, where date given is approximate.

d = date on building.

b = recorded date of building.

Date	Building, Place, &c.	Dimensions of Walling Bricks in inches	Courses Rise	Authority	Remarks
11th cent.	Trinity Church, Colchester— Saxon doorway, Roman bricks	$1\frac{1}{2}$ mostly	$5=11\frac{1}{2}$		Some $3\frac{1}{2}$ thick
c. 1520-33	West Stow Hall, Suffolk— wall under East passage arcading	$9\frac{1}{2} \times 4\frac{1}{2} \times 1\frac{1}{2}$ ($1\frac{1}{8}$ and $1\frac{3}{4}$)	$4=10$		
c. 1200	Little Coggeshall Abbey, Essex—outbuilding	$12 \times 5\frac{1}{2} \times 1\frac{3}{4}$ ($11-12\frac{1}{2}$) (6) ($1\frac{7}{8}$)			Reds
1220	Little Coggeshall Abbey, Essex—St. Nicholas Chapel —quoins	$12 \times 6 \times 1\frac{3}{4}$	$4=10$		Thirty measurements taken. Medium and bright reds
13th cent.	Salmestone Grange, Margate	$9\frac{3}{4} \times 4\frac{3}{4} \times 1\frac{7}{8}$ $8 \times 3\frac{3}{4} \times 1\frac{1}{4}$	$4=10$		Muddy yellows, few pinks and reds
1436	Ewelme, Oxon—schools, etc.	$9\frac{1}{4} \times 4\frac{1}{2} \times 1\frac{3}{4}$	$4=9\frac{1}{2}$		Reds
Late 15th cent.	Jesus College, Cambridge— gateway	$8\frac{3}{4} \times 4\frac{1}{2} \times 1\frac{3}{4}$	$4=11$	Sir R. Blomfield	Reds. "Hist. Renaiss. Arch. in Eng.," p. 351
c. 1500	At V. and A. Museum, from house at Prittlewell—mantel over stone fireplace	$8\frac{3}{4} \times 4\frac{1}{4} \times 1\frac{7}{8}$	As rebuilt $4=9\frac{1}{2}$		Pinkish-reds
b. 1503	St. Cross Hosp., Hants.—turret in N.E. corner Gt. Court	$9\frac{1}{2} \times 4\frac{1}{4} \times 1\frac{3}{4}-2\frac{1}{4}$	Chequer work		Some $1\frac{1}{2}$ and 2
c. 1260-80	Little Wenham Hall, Suffolk —square tower, taken from hall roof	$9 \times 4\frac{1}{4} \times 2$	$4=10$		Mostly cream and muddy greenish-yellows. Oc- casional pinks and reds
c. 1280	Allington Castle, Kent — vaulting and arches only	$9 \times 4\frac{1}{4} \times 2$			Rosy pink colour
c. 1335	Beverley Minster, York—fill- ing in of nave vault	$10\frac{1}{2} \times 5\frac{1}{2} \times 2$		John Bilson	R.I.B.A. Journal, 1908, p. 279
1409-10	North Bar, Beverley	$10\frac{1}{2} \times 5\frac{1}{2} \times 2$		John Bilson	<i>Ibid.</i>
c. 1380	Thornton Abbey, Lincs. — gatehouse	$11 \times 5\frac{1}{2} \times 2$		John Bilson	Trans. E. Riding Antiq. Soc., 1896, p. 47
c. 1440	Tattershall Castle, Lincoln	Average $8\frac{1}{2} \times 4 \times 2$		William Weir	Letter
1448	Queens' College, Cambridge	$8 \times 4-4\frac{1}{4} \times 1\frac{3}{4}-2$	$4=11\frac{1}{2}$	Sir R. Blomfield	Purp. reds. "Hist. Renaiss Arch. Eng.," p. 348
Late 15th cent.	Carlinge (near Westgate), Kent—Dent de Lion gate- house	$8\frac{3}{4} \times 4\frac{1}{4} \times 2$	$4=9\frac{1}{2}$		Four courses bricks, 4 courses knapped flints. Red (some yellow) bricks
Before 1494	Faulkbourne Hall, Essex— N.E. tower	$8\frac{1}{2} \times 3\frac{3}{4} \times 2$	$4=10\frac{1}{2}$		Rich reds
c. 1480	Bishop's Palace, Hatfield, Herts.	$9 \times 4\frac{1}{4} \times 2$	$4=11\frac{1}{2}$		Rich reds, many deep
1482	Oxburgh Hall, Norfolk— gateway tower	$9 \times 4 \times 2$	$4=10\frac{3}{4}$		Medium reds
15th cent.	Bacton Abbey, Norfolk	$9\frac{1}{2} \times 4\frac{1}{2} \times 2$	$4=12\frac{1}{2}$		Medium and dark reds
Early 16th cent.	Sturry Court, Kent—gateway	$8\frac{1}{2} \times 4\frac{1}{4} \times 2$	$4=10\frac{1}{2}$		Reds

TABLE OF BRICK MEASUREMENTS ARRANGED ACCORDING TO THICKNESS—*continued.*

Date	Building, Place, &c.	Dimensions of Walling Bricks in inches	Courses Rise	Authority	Remarks
Early 16th cent.	Old Vicarage, Methwold, Norfolk	$8\frac{1}{2} \times 4\frac{1}{2} \times 2$	$4 = 10\frac{3}{4}$		Deep reds
Early 16th cent.	St. Osyth's Church, Essex—nave arcading	$9\frac{1}{2} \times 4\frac{1}{2} \times 2$ ($1\frac{1}{2}$)	$4 = 10\frac{1}{2}$		Most orange-red
Early 16th cent.	Stock Street Farm, Gt. Coggeshall, Essex—chimney	$9 \times 4\frac{1}{2} \times 2$	$4 = 10\frac{1}{2}$		Reds
c. 1510	Farnham Castle, Surrey—keep	$9 \times 4\frac{1}{2} \times 2$	$4 = 9\frac{1}{2}$		Reds, many blue headers
c. 1520	Hampton Court Palace, Middlesex—E. side of Clock Ct.	$8\frac{7}{8} - 8\frac{1}{2} \times 4\frac{1}{2} - 4 \times 2$	$4 = 10$		Deep reds
c. 1520	Layer Marney Towers, or Hall, Essex	$9\frac{1}{2} \times 4\frac{3}{8} \times 2$	$4 = 10\frac{1}{2}$		Reds, varied diapers in blue headers
c. 1525	Sutton Place (near Guildford), Surrey	$9 \times 4\frac{1}{2} \times 2$	$4 = 10\frac{1}{2}$		Deep reds, some lighter
1525	Hengrave Hall, Suffolk	$9\frac{1}{2} \times 4\frac{1}{2} \times 2$ (many $2\frac{1}{2}$)	$4 = 10\frac{1}{2}$		Cream, inclined to yellow
c. 1535	East Barsham Manor House, Norfolk—gatehouse	$9 \times 4\frac{1}{2} \times 2$	$4 = 11$		Reds
After 1536	Little Leez, or Leighs, Priory, Essex—E. gatehouse	$9\frac{1}{2} \times 4\frac{1}{2} \times 2 - 2\frac{1}{2}$	$4 = 10\frac{1}{2}$		Medium reds
Before 1638	Pocock's School, Rye, Sussex	$8\frac{1}{2} \times 4\frac{1}{2} \times 2$	$4 = 10\frac{1}{2}$		Deep and some bright reds
c. 1640	Balls Park, Hertford, Herts.	$9 \times 4\frac{1}{2} \times 2$ (some $2\frac{1}{2}$)	$4 = 11\frac{1}{2}$		Orange red
1640	Old Sick House, Winchester College, Hampshire	$9\frac{1}{2} \times 4\frac{1}{2} \times 2$	$4 = 10\frac{1}{2}$		Deep reds
1683	Holy Jesus Hospital, Newcastle-on-Tyne	$9 \times 4\frac{1}{2} \times 2$ (some $9\frac{1}{2} \times 4\frac{1}{2} \times 2\frac{1}{2}$)	$4 = 10\frac{1}{2}$		Pale pink, appear very hard
c. 1687	Sarre, Kent—house with Dutch gable and initials R.C. to iron tie	$9 \times 4\frac{1}{2} \times 2$	$4 = 10\frac{1}{2}$		Medium reds
Late 17th cent.	Sowden's Farm, Westfield, Sussex—external chimney	$9 \times 4\frac{3}{8} \times 2$	$4 = 10\frac{3}{4}$		Medium reds
c. 1315-20	Holy Trinity Church, Hull, Yorks.—S. transept	$9 \times 4\frac{3}{8} \times 2\frac{1}{8}$		John Bilson	Trans. E. Riding Antiq. Soc., 1896, p. 46 All English Bond
c. 1315-20	Holy Trinity Church, Hull, Yorks.—N. transept	$9\frac{3}{4} \times 4\frac{3}{4} \times 2\frac{1}{8}$		John Bilson	
1446	Herstmonceaux Castle, Sussex—S. front of gatehouse	$9\frac{1}{2} \times 4\frac{3}{4} \times 2\frac{1}{8}$	$4 = 11$		Thickness varies between $1\frac{1}{2}$ and $2\frac{3}{8}$; many are $2\frac{1}{2}$ Deep reds
Early 16th cent.	East Horndon Church, Essex	$8\frac{3}{4} \times 4\frac{1}{2} \times 2\frac{1}{8}$ (some $1\frac{1}{2} \times 2\frac{3}{8}$)	$4 = 10\frac{1}{2} - 11$		Deep red. Diapers in blue headers
Early 16th cent.	Chignal Smealey Church, Essex—S. wall	$9\frac{5}{8} \times 4\frac{1}{2} \times 2\frac{1}{8}$	$4 = 10\frac{3}{8}$		Deep red, some lighter
Early 16th cent.	Feering, Essex—church porch	$9 \times 4\frac{1}{2} \times 2$ ($2\frac{1}{8} - 2\frac{1}{2}$)	$4 = 10\frac{1}{2}$		Rich bright reds, some brown, mauve, etc.
16th cent.	Rolvenden, Kent—Gate House, porch	$9 \times 4\frac{1}{2} \times 2\frac{1}{8}$ ($8\frac{1}{2} - 9\frac{1}{2}$)	$4 = 10\frac{1}{2}$		Mid reds to light pinks
1520-33	West Stow Hall, Suffolk—gateway	$9\frac{1}{2} \times 4 \times 2\frac{1}{8}$	$4 = 10\frac{1}{2}$		Varied reds, modern re-pointing

TABLE OF BRICK MEASUREMENTS ARRANGED ACCORDING TO THICKNESS—*continued.*

Date	Building, Place, &c.	Dimensions of Walling Bricks in inches	Courses Rise	Authority	Remarks
d. 1607	Old Charlton House, Kent	$9\frac{1}{2} \times 4\frac{1}{2} \times 2\frac{1}{8}$ (some $2-2\frac{1}{4}$)	$4=11$		Most deep reds, some light. Rough texture. Black pointing produces sombre effect
c. 1635	Raynham Hall, Norfolk	$9\frac{1}{2}-10 \times 4\frac{3}{4} \times 2\frac{1}{8}$	$4=10\frac{1}{2}$		Reds. Both English and Flemish Bonds
c. 1680	King's Head, Sissinghurst, Kent—external chimney	$9\frac{1}{2} \times 4\frac{3}{8} \times 2\frac{1}{8}-2\frac{1}{2}$	$4=10\frac{3}{4}$		Reds
d. 1697	Wren's House, West Street, Chichester, Sussex	$9 \times 4\frac{1}{8} \times 2\frac{1}{8}$	$4=11\frac{1}{4}$		Red
Early 18th cent.	Church House, Northiam, Sussex—front	$8\frac{3}{4} \times 4\frac{1}{4} \times 2\frac{1}{8}$			Pinky reds
c. 1710	Montagu House, Culver Street, Colchester, Essex	$8\frac{1}{2} \times 3\frac{3}{4} \times 2\frac{1}{8}$	$4=10$		Light red stretchers, very dark headers
d. 1711	Unitarian Chapel, Bury St. Edmunds, Suffolk	$8\frac{3}{8} \times 4\frac{1}{8} \times 2\frac{1}{8}$	$4=9\frac{1}{2}$		Brownish-reds. All brickwork is gauged. Dressings $8\frac{3}{8} \times 4\frac{1}{8} \times 2$, $4=8\frac{3}{8}$ bright red
d. 1718	Willmer House, West Street, Farnham, Surrey	$9 \times 4\frac{1}{4} \times 2\frac{1}{8}$	$4=9\frac{1}{2}$		Reds. All brickwork is gauged
c. 1790	House, Maltravers Street, Arundel, Sussex—wings quoins	$9 \times 4\frac{5}{8} \times 2\frac{1}{8}$ $8\frac{1}{2} \times 4 \times 2\frac{1}{8}$	$4=10\frac{1}{8}$ $4=10\frac{1}{8}$		Reds Reds
c. 1340	Trinity Church, Hull, Yorks.—chancel	$10\frac{1}{2} \times 5 \times 2\frac{3}{8}$		John Bilson	Trans. E. Riding Antiq. Soc., 1896, p. 46
Between 1424 and 1459	Caister Castle, Norfolk	$8\frac{1}{2} \times 4\frac{1}{4} \times 2\frac{1}{4}$ (some $9\frac{1}{2}$ and 8)	$4=11$ (some 10 and 12)		Inside light and deep plum reds. Outside the same and many buff and cream
c. 1490	Rectory Towers, Hadleigh, Suffolk	$9 \times 4\frac{1}{2} \times 2\frac{1}{4}$	$4=10\frac{1}{2}$		Diapers purply-black. Varied reds
Late 15th cent.	St. John's College, Cambridge,—gateway towers	$8\frac{1}{2} \times 4\frac{1}{2} \times 2\frac{1}{4}$	$4=11\frac{1}{2}$	Sir R. Blomfield	"Hist. Renaiss. Arch. England," p. 351
Early 16th cent.	Salmestone Grange, Margate, Kent—fire arch	$8\frac{1}{2} \times 4 \times 2\frac{1}{4}$	$4=12$		Pink and putty colours
15th cent.	Canterbury Cathedral—Bell Harry Tower Stair wall*	$8\frac{1}{2} \times 4 \times 2\frac{1}{4}-2\frac{1}{2}$	$4=11$		Reds, some pink. Amongst earliest are muddy yellows
	Inside wheelhouse	$9\frac{3}{4} \times 4\frac{1}{2} \times 2\frac{1}{4}$	$4=11$		Reds
Early 16th cent.	Killigrews, or Shenfield House, Margaretting, Essex—turrets at wall angles by moat	$9 \times 4\frac{1}{4} \times 2\frac{1}{4}$ ($2\frac{1}{8}$ and $2\frac{3}{8}$)	$4=11\frac{1}{2}$		Medium reds
Early 16th cent.	Pebmarsh, Essex—church S. porch	$9\frac{1}{2} \times 4\frac{3}{8} \times 2\frac{1}{4}$ (2 and $2\frac{1}{8}$)	$4=11\frac{1}{4}$		Light reds, some buffs
Early 16th cent.	Tolleshunt Major, Essex—church tower	$9\frac{1}{4} \times 4\frac{3}{8} \times 2$ $9 \times 4\frac{1}{4}-4\frac{1}{2} \times 2\frac{1}{4}$	$4=10\frac{1}{2}$		Reds, browns. Plum, brown, dark grey and other darker headers used for diapers

* Some re-used low down $8 \times 3\frac{1}{2} \times 2$ ($4=9\frac{1}{2}$) and some small $1\frac{1}{4}$ " thick.

TABLE OF BRICK MEASUREMENTS ARRANGED ACCORDING TO THICKNESS—*continued.*

Date	Building, Place, &c.	Dimensions of Walling Bricks in inches	Courses Rise	Authority	Remarks
Late 15th or early 16th cent.	Rye House, Herts.—gatehouse	$9 \times 4\frac{1}{2} \times 2\frac{1}{2}$ (some $9 \times 4\frac{3}{4} \times 2$)	$4 = 10\frac{1}{2}$		Various reds. Vitrified headers deep purple
c. 1520	Stutton Hall, Suffolk	$9\frac{1}{2} \times 4\frac{1}{2} \times 2\frac{1}{2}$ & $2\frac{1}{2}$	$4 = 11\frac{1}{2}$		Rich reds, some lighter
c. 1530	Roydon Hall, East Peckham, Kent—octagonal buildings in garden	$9\frac{1}{2} \times 4\frac{1}{2} \times 2\frac{1}{2}$	$4 = 11$		Reds
c. 1530	Hales Place, Tenterden, Kent —garden pavilions entrance archway well house	$9 \times 4\frac{1}{2} \times 2\frac{3}{4}$ $9\frac{3}{8} \times 4\frac{1}{4} \times 2\frac{1}{2}$ $9 \times 4\frac{1}{2} \times 2\frac{1}{2}$	$4 = 10\frac{5}{8}$ $4 = 11\frac{1}{2}$ $4 = 10\frac{5}{8}$		Reds
d. 1534	Laughton Place, Sussex— towers	$9 \times 4\frac{1}{2} \times 2\frac{1}{2}$	$4 = 11$		Rich red colour
1586	Emmanuel College, Cambridge	$9\frac{1}{2} \times 4\frac{1}{2} \times 2\frac{1}{2}$		Sir R. Blomfield	"Hist. Renaiss. Arch. Eng.", p. 351
c. 1590	Arwarton Hall, Suffolk— gateway	$9\frac{1}{2} \times 4\frac{3}{8} \times 2\frac{1}{2}$	$4 = 10\frac{1}{2}$		Deep and light reds
d. 1595	Hunt's Farm, Crundale, Kent —brick window base	$2\frac{1}{2}$	$4 = 10\frac{1}{2}$		Chimney apparently similar bricks, deep reds
Late 16th cent.	Breccles Hall, Norfolk— chimney stack, E. end	$9\frac{1}{2} \times 4\frac{3}{8} \times 2\frac{1}{2}$	$4 = 11\frac{1}{2}$		Most deep reds
Late 16th cent.	Elham, Kent—house in square	$9 \times 4 \times 2\frac{1}{2}$ (some $2 - 2\frac{1}{2}$)	$4 = 11$		Light and plum reds
c. 1600	Slyfield Manor, Great Book- ham, Surrey	$9\frac{1}{2} \times 4\frac{1}{2} \times 2\frac{1}{2}$	$4 = 10\frac{5}{8}$		
c. 1630-40	Forty Hall, Enfield, Middle- sex—gateway	$9\frac{1}{2} \times 4\frac{1}{2} \times 2\frac{1}{2}$			Some early gauged work
c. 1635	Broome Park, Denton, Kent	$9 \times 4\frac{1}{2} \times 2\frac{1}{2}$	$4 = 11$		Light and plum reds
Refronted c. 1637	Restoration House, Rochester	$9 \times 4\frac{1}{2} \times 2\frac{1}{2} - 2$	$4 = 11$		Deep red, rough gauging. Dressings lighter reds
	59-60, Lincoln's Inn Fields, London—gate piers	$8 \times 3\frac{1}{2} \times 2\frac{1}{2}$	$4 = 9\frac{5}{8}$		Gauged. Probably re- built after the Restoration.
1640	Charlton Church, Kent—S. porch	$9 \times 4\frac{1}{2} \times 2\frac{1}{2}$	$4 = 10\frac{1}{2}$		Mostly deep red, part rebuilt
c. 1645	Barnham Court, Sussex	$9\frac{1}{2} \times 4\frac{1}{2} \times 2\frac{1}{2}$	$4 = 11\frac{1}{2}$		Rich reds
c. 1654	Tyttenhanger Park, St. Albans, Herts.—S. elevation	$9\frac{3}{8} \times 4\frac{1}{2} \times 2\frac{1}{2}$	$4 = 11\frac{1}{2}$		Reds
d. 1665	Mackerye End, Wheathamp- stead, Herts.	$8\frac{1}{2} \times 4 \times 2\frac{1}{2}$ (some 2 & $2\frac{1}{2}$)	$4 = 11$		Various reds
d. 1691	Guilton, Kent—porch to cottage	$9\frac{1}{2} \times 4\frac{1}{2} \times 2\frac{1}{2}$	$4 = 12$		Deep reds, few orange reds
d. 1698	Wingham, Kent—row of cottages in street	$8\frac{3}{4} \times 4 \times 2\frac{1}{2} - 2\frac{1}{2}$	$4 = 10\frac{1}{2}$		Reds
c. 1700	Chicheley Hall, Bucks.— below plinth, "rubbed and edged" above plinth, gauged	$8\frac{1}{2} \times 4 \times 2\frac{1}{2}$ $8\frac{1}{2} \times 4\frac{3}{4} \times 2\frac{1}{2}$	$4 = 10\frac{1}{2}$ $4 = 9\frac{1}{2}$		Bricks vary in colour from yellow-reds to plum-reds

TABLE OF BRICK MEASUREMENTS ARRANGED ACCORDING TO THICKNESS—*continued.*

Date	Building, Place, &c.	Dimensions of Walling Bricks in inches	Courses Rise	Authority	Remarks
c. 1700	33, Mark Lane, E.C., London	$7\frac{1}{4} \times 3\frac{3}{8} \times 2\frac{1}{4}$	$4=9\frac{3}{8}$		Bright reds and plum reds
Late 17th cent.	West Stow Hall, Suffolk—gate piers	$9\frac{1}{4} \times 4\frac{1}{4} \times 2\frac{1}{4}$	$4=11\frac{1}{2}$		Reds
d. 1703	Tichborne, Hants. — church tower	$8\frac{3}{4} \times 4\frac{3}{8} \times 2\frac{1}{4}$	$4=10\frac{1}{2}$		Flemish bond, red stretches grey headers
1705	Queen Anne's Gate, S.W.—angle	$8\frac{1}{2} \times 4 \times 2\frac{1}{4}$	$4=11\frac{1}{2}$		Grey stocks Dressings $8\frac{1}{2} \times 4 \times 2\frac{1}{4}$, $4=11\frac{1}{2}$ lighter reds
d. 1706	Corn Exchange, Rochester	$8 \times 3\frac{7}{8} \times 2\frac{1}{4}$	$4=9\frac{1}{8}$		Red. All gauged, fine joints
c. 1710	Lullingstone Castle House, Eynsford, Kent—entrance front	$8\frac{1}{2} \times 4 \times 2\frac{1}{4}$	$4=10\frac{5}{8}$		Reds
d. 1717	Convent, Longbridge, Farnham, Surrey	$8\frac{1}{2} \times 3\frac{3}{4} - 4\frac{1}{4} \times 2 - 2\frac{1}{4}$	$4=10\frac{1}{2}$		Even coloured reds "rubbed and edged" $\frac{1}{4}$ joints. Dressings $2\frac{1}{8}$ thick with "invisible" joints
d. 1744	Church House, Beckley, Sussex	$8\frac{1}{4} \times 4\frac{1}{8} \times 2\frac{1}{4}$	$4=11$		Pinky-reds
c. 1780	Maltravers Street, Arundel, Sussex—house, S. side, near hill	$8\frac{5}{8} \times 4 \times 2\frac{1}{4}$	$4=10\frac{5}{8}$		Reds
c. 1713	Pallant House, Chichester, Sussex	$8\frac{1}{4} \times 4 \times 2\frac{5}{8}$	$4=11\frac{3}{8}$		Dull reds up to 1st floor, brighter reds above. Dressings $7\frac{5}{8} \times 3\frac{3}{4} \times 2\frac{1}{8}$, $4=9\frac{1}{8}$, bright red
c. 1530	Lullingstone Castle, Eynsford, Kent—gatehouse	$9\frac{1}{2} \times 4\frac{1}{2} \times 2\frac{3}{8}$	$4=12$		Deep plum-reds, some lighter
c. 1530	Cale Hill Stables, Little Chart, Kent	$9 - 9\frac{1}{2} \times 4\frac{1}{4} \times 2\frac{1}{8} - 2\frac{3}{8}$	$4=11\frac{3}{8}$		Reds
c. 1535	Boughton Malherbe Place, Kent—brick gable and chimney crow-stepped	$9 \times 4\frac{1}{2} \times 2\frac{3}{8}$	$4=11\frac{1}{2}$		Reds
c. 1535	Sissinghurst Castle, Kent	$9\frac{1}{4} \times 4\frac{1}{4} \times 2\frac{3}{8}$	$4=11\frac{3}{8}$		Reds
d. 1594	Cobham Hall, Kent	$9\frac{1}{2} \times 4\frac{5}{8} \times 2\frac{3}{8} - (2\frac{1}{2})$	$4=11\frac{1}{2}$		Deep plum-reds, some lighter
c. 1546	Beckingham Hall, Tolleshunt Major, Essex—gatehouse	$9\frac{1}{2} \times 4\frac{1}{2} \times 2\frac{3}{8} (2\frac{1}{4} - \frac{1}{2})$	$4=11\frac{3}{4}$		Reds
c. 1630-40	Old Charlton, Kent—garden house	$9 \times 4\frac{1}{4} \times 2\frac{3}{8}$	$4=10\frac{5}{8}$		The rebuilt elevation includes Luton purples
1684	School, Winchester, Hants.	$8\frac{1}{2} \times 4\frac{1}{4} \times 2\frac{3}{8}$	$4=11\frac{1}{2}$		Deep and lighter reds
c. 1700	Hampton Court Palace, Middlesex—garden wall	$8\frac{1}{2} \times 4\frac{5}{8} \times 2\frac{3}{8}$	$4=10\frac{3}{4}$		
d. 1713	Bradbourne, Larkfield, Kent	$8\frac{5}{8} \times 4\frac{1}{8} \times 2\frac{3}{8}$	$4=11$		Pinkish stocks, some yellow. Dressings, $8 \times 3\frac{7}{8} \times 2\frac{1}{8}$, $4=9\frac{1}{4}$, bright reds
d. 1729	Womenswold Church, Kent—porch	$8\frac{1}{2} \times 4 \times 2\frac{3}{8}$			Reds

TABLE OF BRICK MEASUREMENTS ARRANGED ACCORDING TO THICKNESS—*continued.*

Date	Building, Place, &c.	Dimensions of Walling Bricks in inches	Courses Rise	Authority	Remarks
Late 18th cent.	6, Higham Place, Newcastle-on-Tyne	$8\frac{1}{2} \times 4\frac{1}{2} \times 2\frac{1}{2}$	$4 = 11\frac{1}{2}$		Pink
c. 1750	Arundel, Sussex—house in centre of Strand	$9 \times 4\frac{1}{2} \times 2\frac{1}{2}$	$4 = 11\frac{1}{2}$		Reds, grey headers
c. 1770	37, Crouch Street, Colchester—venetian window	$8\frac{1}{2} \times 4 \times 2\frac{1}{2}$	$4 = 11\frac{1}{2}$		Reds
c. 1550	Eastbury Manor House, Barking, Essex—base of tower	$9\frac{1}{2} \times 4\frac{1}{2} \times 2\frac{1}{2}$	$4 = 12\frac{1}{2}$		Dark reds. Repointing reduces apparent thickness
1555	Little Hautbois Hall, Norfolk	$10 \times 4\frac{1}{2} \times 2\frac{1}{2}$ (some $2\frac{1}{2}$)	$4 = 11\frac{1}{2}$ (some $4 = 10\frac{1}{2}$)		Deep plum-reds
1666 d. on gates	Bromley College, Kent	$9 \times 4\frac{1}{2} \times 2\frac{1}{2}$	$4 = 11\frac{1}{2}$		Reds
c. 1672	Alms House, Richard's Charity, Goodnestone, Kent	$9 \times 4\frac{1}{2} \times 2\frac{1}{2}$	$4 = 12$		Deep reds
d. 1677	4, King's Bench Walk, London	$8\frac{1}{2} \times 3\frac{1}{2} \times 2\frac{1}{2}$	$4 = 11$		Reds
c. 1680	St. Peter's, Thanet, Kent—gabled brick house, 200 yds. from Church	$9\frac{1}{2} \times 4\frac{1}{2} \times 2\frac{1}{2}$	$4 = 12$		Most deep purply-red, some light red
d. 1687	Guildhall, Rochester, Kent	$9 \times 4 \times 2\frac{1}{2}$	$4 = 12$		Purplish-red
d. 1688	Blue Coat School, Westminster, London	$8\frac{1}{2} \times 4 \times 2\frac{1}{2}$	$4 = 11\frac{1}{2}$		Grey stocks. Dressings $8 \times 4 \times 2\frac{1}{2}$, $4 = 10\frac{1}{2}$ ins. Bright reds
c. 1690	Hampton Court Palace, Middlesex—S. front to 1st floor	$8\frac{1}{2} \times 4 \times 2\frac{1}{2}$	$4 = 10\frac{1}{2}$		Bright red. Gauged piers $8 \times 3\frac{1}{2} \times 2\frac{1}{2}$, $4 = 10\frac{1}{2}$ ins. Above 1st floor the wallings are gauged
	Fountain Court, under arcad-ing	$8\frac{1}{2} \times 4\frac{1}{2} \times 2\frac{1}{2}$	$4 = 10\frac{1}{2}$		Red. Gauged
c. 1690	Morden Hall, Surrey—garden wall	$8\frac{1}{2} \times 4 \times 2\frac{1}{2}$	$4 = 12$		Deep reds, irregular surfaces
1695	Morden College, Blackheath, Kent	$9 \times 4 \times 2\frac{1}{2}$	$4 = 12$		Deep reds Dressings lighter red
1699-1700	46, Lincoln's Inn Fields, London	$8 \times 3\frac{1}{2} \times 2\frac{1}{2}$	$4 = 11\frac{1}{2}$		Reds
c. 1700	Ormeley Lodge, Ham Common, Surrey	$8\frac{1}{2} \times 4 \times 2\frac{1}{2}$	$4 = 12$		Deep reds
c. 1720	Calleva House, Wallingford, Berks.	$8\frac{1}{2} \times 4\frac{1}{2} \times 2\frac{1}{2}$	$4 = 11$		Greys and brown-reds Dressings $8 \times 4 \times 2\frac{1}{2}$, $4 = 11$ ins. Rich red rubbers
c. 1720	28, St. Andrew's Street, Hertford, Herts.	$8\frac{1}{2} \times 4 \times 2\frac{1}{2}$	$4 = 11\frac{1}{2}$		Yellow-reds Dressings $8 \times 3\frac{1}{2} \times 2\frac{1}{2}$, $4 = 11\frac{1}{2}$, bright reds. Gauged $8\frac{1}{2} \times 3\frac{1}{2} \times 2\frac{1}{2}$, $4 = 10$
c. 1720	Wrencote, Croydon, Surrey	$8\frac{1}{2} \times 3\frac{1}{2} \times 2\frac{1}{2}$			Reds
Early 18th cent.	Red House, Sawbridgeworth, Herts.	$8\frac{1}{2} \times 4\frac{1}{2} \times 2\frac{1}{2}$	$4 = 11\frac{1}{2}$		Mauve-reds

TABLE OF BRICK MEASUREMENTS ARRANGED ACCORDING TO THICKNESS—*continued*.

Date	Building, Place, &c.	Dimensions of Walling Bricks in inches	Courses Rise	Authority	Remarks
c. 1730	Watlington, Oxon—house next to that with Doric doorway	$8\frac{1}{2} \times 4\frac{1}{8} \times 2\frac{1}{2}$	$4 = 11\frac{1}{2}$		Reds
c. 1730	31, Old Burlington Street, London	$8\frac{1}{2} \times 4 \times 2\frac{1}{2}$	$4 = 11\frac{1}{2}$		Pinks and buffs
c. 1730	Sergeant's Inn, Fleet Street, London	$8\frac{1}{2} \times 4 \times 2\frac{1}{2}$	$4 = 12\frac{1}{2}$		Yellow-grey and pink stocks
c. 1740	Underdown Farm House, Eddington, Kent	$8\frac{1}{2} \times 4 \times 2\frac{1}{2}$	$4 = 12$		Light reds
c. 1750	39, West Street, Farnham, Surrey	$9 \times 4\frac{1}{2} \times 2\frac{1}{2}$	$4 = 10\frac{7}{8}$		Grey stocks (yellowish and some pinkish) Dressings $9 \times 4 \times 2\frac{1}{8}$, $4 = 9\frac{1}{2}$ Strings gauged
1752	45 Lincoln's Inn Fields, London	$8\frac{1}{2} \times 3\frac{1}{2} \times 2\frac{1}{2}$			Grey stocks, some pinkish
c. 1767	Albany, Piccadilly	$8\frac{1}{2} \times 4 \times 2\frac{1}{2}$	$4 = 12$		Buff stocks
d. 1631	Kew Palace, Surrey	$8\frac{3}{4} \times 4\frac{1}{2} \times 2\frac{9}{16}$	$4 = 11\frac{3}{4}$		Rich reds. Early gauged work.
d. 1631	„ „ by S. doorway	$8\frac{1}{2} \times 4\frac{1}{2} \times 2\frac{1}{2}$	$4 = 10\frac{1}{2}$		Gauged $7 \times 3\frac{1}{2} \times 2$, $4 = 9\frac{1}{2}$
c. 1690	Near Canterbury, Kent—on Sandwich Road, gate piers, rusticated bricks, stone caps	$9 \times 4\frac{1}{4} \times 2\frac{5}{8}$	$4 = 11$		Reds
d. 1711	Westwell, Tenterden, Kent	$9 \times 4\frac{1}{2} \times 2\frac{5}{8}$	$4 = 12\frac{1}{2}$		Reds
1717	Lockleys, Welwyn, Herts.	$9 \times 4\frac{1}{8} \times 2\frac{5}{8}$	$4 = 12$		Plum-pink, red dressings recently coloured Dressings $8\frac{5}{8} \times 4\frac{1}{16} \times 2\frac{5}{8}$ — $2\frac{3}{4}$, $4 = 12$ Gauged work $7\frac{3}{4} \times 3\frac{5}{8}$ $\times 2\frac{9}{16}$. Very carefully gauged
c. 1725	Finchcocks, Goudhurst, Kent	$9 \times 4\frac{1}{4} \times 2\frac{1}{8}$	$4 = 12\frac{1}{2}$		Reds. Dressings $9 \times 4\frac{1}{4} \times 2\frac{1}{8}$, $4 = 12\frac{1}{2}$
c. 1730	Watlington, Oxon—house with Doric doorway	$9 \times 4\frac{3}{8} \times 2\frac{3}{4}$	$4 = 12\frac{1}{2}$		Reds
c. 1736	Man. & Dist. Bank, King Street, Manchester	$9 \times 4\frac{1}{2} \times 2\frac{3}{4}$	$4 = 12$		Pale reds
2nd half 18th cent.	Houses in Rodney Street, Liver- pool	$9\frac{1}{2} \times 4\frac{1}{2} \times 3$	$4 = 14$		Reds, good texture

TABLE OF BRICK MEASUREMENTS

Chronologically arranged

Date	Building, Place, &c.	Dimensions of Walling Bricks in inches	Courses Rise	Authority	Remarks
11th cent.	Trinity Church, Colchester—tower—Roman bricks	$1\frac{1}{2} - 3\frac{1}{2}$ thick	$5 = 11\frac{1}{2}$		
1200	Little Coggeshall Abbey—outbuilding	$12 \times 5\frac{1}{2} \times 1\frac{3}{4}$ ($11 - 12\frac{1}{2}$) (6) ($1\frac{3}{8}$)			
1220	Little Coggeshall Abbey—St. Nicholas Chapel	$12 \times 6 \times 1\frac{3}{4}$	$4 = 10$		
c. 1260-80	Little Wenham Hall	$9 \times 4\frac{1}{2} \times 2$	$4 = 10$		Some as large as $9\frac{1}{2} \times 4\frac{1}{2} \times 2\frac{1}{2}$
c. 1280	Allington Castle	$9 \times 4\frac{1}{2} \times 2$			
13th cent.	Salmostone Grange, Margate	$9\frac{1}{2} \times 4\frac{1}{2} \times 1\frac{7}{8}$ $8 \times 3\frac{1}{2} \times 1\frac{3}{4}$	$4 = 10$		
1315-20	Trinity Church, Hull	$9 \times 4\frac{1}{2} \times 2\frac{1}{8}$		Bilson	
1315-20	Trinity Church, Hull	$9\frac{1}{2} \times 4\frac{1}{2} \times 2\frac{1}{2}$		Bilson	
c. 1335	Beverley Minster	$10\frac{1}{2} \times 5\frac{1}{2} \times 2$		Bilson	
c. 1340	Trinity Church, Hull	$10\frac{1}{2} \times 5 \times 2\frac{3}{8}$		Bilson	
c. 1380	Thornton Abbey, Lincs.—gatehouse	$11 \times 5\frac{1}{2} \times 2$		Bilson	
1409-10	North Bar, Beverley	$10\frac{1}{2} \times 5\frac{1}{2} \times 2$		Bilson	
1436	Ewelme—schools, etc.	$9\frac{1}{2} \times 4\frac{1}{2} \times 1\frac{3}{4}$	$4 = 9\frac{1}{2}$		
c. 1440	Tattershall Castle	$8\frac{1}{2} \times 4 \times 2$		Weir	
1446	Herstmonceaux Castle	$9\frac{1}{2} \times 4\frac{1}{2} \times 2\frac{1}{2}$	$4 = 11\frac{1}{2}$		
1448	Queens' College, Cambridge	$8 \times 4 - 4\frac{1}{2} \times 1\frac{3}{4} - 2$	$4 = 11\frac{1}{2}$	Blomfield	
c. 1459	Caister Castle	$8\frac{1}{2} \times 4\frac{1}{2} \times 2\frac{1}{2}$ (some $9\frac{1}{2}$ & 8)	$4 = 11$ (some 10 & 12)		
Late 15th	Carlinge, Dent de Lion—gatehouse	$8\frac{1}{2} \times 4\frac{1}{2} \times 2$	$4 = 9\frac{1}{2}$		
c. 1480	Bishop's Palace, Hatfield	$9 \times 4\frac{1}{2} \times 2$	$4 = 11\frac{1}{2}$		
1482	Oxburgh Hall	$9 \times 4 \times 2$	$4 = 10\frac{1}{2}$		
c. 1490	Rectory Towers, Hadleigh	$9 \times 4\frac{1}{2} \times 2\frac{1}{2}$	$4 = 10\frac{1}{2}$		
2nd half of 15th cent.	Faulkbourne Hall	$8\frac{1}{2} \times 3\frac{1}{2} \times 2$	$4 = 10\frac{1}{2}$		
Late 15th cent.	St. John's College, Cambridge	$8\frac{1}{2} \times 4\frac{1}{2} \times 2\frac{1}{2}$	$4 = 11\frac{1}{2}$	Blomfield	
15th cent.	Bacton Abbey	$9\frac{1}{2} \times 4\frac{1}{2} \times 2$	$4 = 12\frac{1}{2}$		
15th cent.	Canterbury Cathedral—Bell Harry Tower, stairwall in wheelhouse	$8\frac{1}{2} \times 4 \times 2\frac{1}{4} - 2\frac{1}{2}$ $9\frac{1}{2} \times 4\frac{1}{2} \times 2\frac{1}{4}$	$4 = 11$ $4 = 11$		Low down, a few re-used $8 \times 3\frac{1}{2} \times 2$, $4 = 9\frac{1}{2}$ & some small bricks $1\frac{1}{2}$ thick
Late 15th cent.	Jesus College, Cambridge	$8\frac{1}{2} \times 4\frac{1}{2} \times 1\frac{3}{4}$	$4 = 11$	Blomfield	
c. 1500	V. & A. Museum, Prittlewell	$8\frac{1}{2} \times 4\frac{1}{2} \times 1\frac{7}{8}$	$4 = 9\frac{1}{2}$		As rebuilt Some $1\frac{1}{2}$ and 2
1503	St. Cross Hosp., Hants.—turret in N.E. corner of Court	$9\frac{1}{2} \times 4\frac{1}{2} \times 1\frac{3}{4} - 2\frac{1}{2}$			
Early 16th cent.	Stock Street Farm, Great Coggeshall	$9 \times 4\frac{1}{2} \times 2$	$4 = 10\frac{1}{2}$		

TABLE OF BRICK MEASUREMENTS CHRONOLOGICALLY ARRANGED—*continued*

Date	Building, Place, &c.	Dimensions of Walling Bricks in inches	Courses Rise	Authority	Remarks
Early 16th cent.	Tolleshunt Major Church	$9\frac{1}{4} \times 4\frac{3}{8} \times 2$ $9 \times 4\frac{1}{4} - 4\frac{1}{4} \times 2\frac{1}{4}$	$4 = 10\frac{1}{2}$		
Early 16th cent.	Sturry Court	$8\frac{1}{2} \times 4\frac{1}{4} \times 2$	$4 = 10\frac{1}{2}$		
Early 16th cent.	Pebmarsh Church, Ex.—S. porch	$9\frac{1}{2} \times 4\frac{3}{8} \times 2\frac{1}{4}$ (2 and $2\frac{1}{8}$)	$4 = 11\frac{1}{4}$		
Early 16th cent.	Old Vicarage, Methwold	$8\frac{3}{4} \times 4\frac{1}{4} \times 2$	$4 = 10\frac{3}{8}$		
Early 16th cent.	St. Osyth's Church	$9\frac{1}{4} \times 4\frac{1}{2} \times 2$ ($1\frac{3}{4}$)	$4 = 10\frac{1}{2}$		
Early 16th cent.	East Horndon Church	$8\frac{3}{4} \times 4\frac{1}{4} \times 2\frac{1}{8}$ (some $1\frac{1}{2}$ & $2\frac{3}{8}$)	$4 = 10\frac{1}{2} - 11$		
Early 16th	Feering Church	$9 \times 4\frac{1}{4} \times 2$ ($2\frac{1}{8}$ & $2\frac{1}{4}$)	$4 = 10\frac{3}{4}$		
Early 16th cent.	Chignal Smealey Church	$9\frac{5}{8} \times 4\frac{1}{2} \times 2\frac{1}{8}$	$4 = 10\frac{3}{8}$		
Early 16th cent.	Salmestone Grange, Margate	$8\frac{1}{2} \times 4 \times 2\frac{1}{4}$	$4 = 12$		
Late 15th or early 16th cent.	Rye House—gatehouse	$9 \times 4\frac{1}{4} \times 2\frac{1}{4}$ (some $9 \times 4\frac{1}{4} \times 2$)	$4 = 10\frac{3}{4}$		
Early 16th cent.	Margaretting, Killigrews, or Shenfield House	$9 \times 4\frac{1}{4} \times 2\frac{1}{4}$ ($2\frac{1}{8}$ & $2\frac{3}{8}$)	$4 = 11\frac{1}{4}$		
c. 1510	Farnham Castle	$9 \times 4\frac{1}{4} \times 2$	$4 = 9\frac{1}{2}$		
c. 1520	West Stow Hall—passage	$9\frac{1}{2} \times 4\frac{1}{2} \times 1\frac{1}{2}$ (some $1\frac{1}{8}$ & $1\frac{3}{4}$)	$4 = 10$		
c. 1520	Hampton Court Palace—E. side of Clock Court	$8\frac{7}{8} - 8\frac{1}{2} \times 4\frac{1}{4} - 4 \times 2$	$4 = 10$		
c. 1520	Laver Marney Towers, or Hall	$9\frac{1}{4} \times 4\frac{3}{8} \times 2$	$4 = 10\frac{1}{4}$		
c. 1520	Stutton Hall	$9\frac{3}{4} \times 4\frac{1}{2} \times 2\frac{1}{4}$ & $2\frac{1}{2}$	$4 = 11\frac{1}{4}$		
1520-33	West Stow Hall	$9\frac{1}{4} \times 4 \times 2\frac{1}{8}$	$4 = 10\frac{1}{4}$		
1525	Hengrave Hall	$9\frac{1}{4} \times 4\frac{1}{4} \times 2 - 2\frac{1}{8}$	$4 = 10\frac{1}{2}$		
c. 1525	Sutton Place, near Guildford	$9 \times 4\frac{1}{4} \times 2$	$4 = 10\frac{1}{4}$		
c. 1530	Hales Place, Tenterden— garden pavilion	$9 \times 4\frac{1}{2} \times 2\frac{3}{8}$	$4 = 10\frac{5}{8}$		
	entrance archway	$9\frac{3}{8} \times 4\frac{5}{8} \times 2\frac{1}{4}$	$4 = 11\frac{1}{4}$		
c. 1530	Hales Place—well house	$9 \times 4\frac{1}{4} \times 2\frac{1}{4}$	$4 = 10\frac{5}{8}$		
c. 1530	Lullingstone Castle, Eynsford	$9\frac{1}{2} \times 4\frac{1}{2} \times 2\frac{3}{8}$	$4 = 12$		
c. 1530	Little Chart, Cale Hill Stables	$9 - 9\frac{1}{2} \times 4\frac{1}{4} \times 2\frac{1}{8} - 2\frac{3}{8}$	$4 = 11\frac{3}{8}$		
c. 1530	Roydon Hall, East Peckham— garden house	$9\frac{3}{4} \times 4\frac{1}{2} \times 2\frac{1}{4}$	$4 = 11$		
d. 1534	Laughton Place	$9 \times 4\frac{1}{2} \times 2\frac{1}{4}$	$4 = 11$		
c. 1535	Boughton Malherbe Place	$9 \times 4\frac{1}{2} \times 2\frac{3}{8}$	$4 = 11\frac{1}{4}$		
c. 1535	East Barsham Manor House —gatehouse	$9 \times 4\frac{1}{4} \times 2$	$4 = 11$		
c. 1535	Sissinghurst Castle	$9\frac{1}{4} \times 4\frac{1}{4} \times 2\frac{3}{8}$	$4 = 11\frac{3}{8}$		
c. 1536	Little Leez, or Leighs, Priory	$9\frac{1}{4} \times 4\frac{1}{4} \times 2 - 2\frac{1}{8}$	$4 = 10\frac{1}{4}$		

TABLE OF BRICK MEASUREMENTS CHRONOLOGICALLY ARRANGED—*continued*

Date	Building, Place, &c.	Dimensions of Walling Bricks in inches	Courses Rise	Authority	Remarks
c. 1546	Beckingham Hall, Tolleshunt Major—gatehouse	$9\frac{1}{2} \times 4\frac{1}{2} \times 2\frac{3}{8}$ ($2\frac{1}{4} - 2\frac{1}{2}$)	$4 = 11\frac{3}{4}$	Blomfield	Gauged work, probably rebuilt
c. 1550	Eastbury Manor House, Barking	$9\frac{3}{4} \times 4\frac{1}{2} \times 2\frac{1}{2}$	$4 = 12\frac{1}{4}$		
1555	Little Hautbois Hall	$10 \times 4\frac{3}{4} \times 2\frac{1}{2}$ (some $2\frac{1}{4}$)	$4 = 11\frac{3}{4}$ (some $4 = 10\frac{1}{2}$)		
1586	Emmanuel College, Cambridge	$9\frac{1}{2} \times 4\frac{1}{2} \times 2\frac{1}{4}$			
c. 1590	Arwarton Hall	$9\frac{1}{2} \times 4\frac{3}{8} \times 2\frac{1}{4}$	$4 = 10\frac{1}{2}$		
d. 1594	Cobham Hall	$9\frac{1}{2} \times 4\frac{5}{8} \times 2\frac{3}{8} - 2\frac{1}{2}$	$4 = 11\frac{1}{2}$		
d. 1595	Hunt's Farm, Crundale	$2\frac{1}{4}$	$4 = 10\frac{1}{2}$		
Late 16th cent.	Elham—house in square	$9 \times 4 \times 2\frac{1}{4}$ (some $2 - 2\frac{1}{8}$)	$4 = 11$		
Late 16th cent.	Breccles Hall	$9\frac{1}{2} \times 4\frac{3}{4} \times 2\frac{1}{4}$	$4 = 11\frac{1}{4}$		
16th cent.	Rolvenden, Kent—Gate House, porch	$9 \times 4\frac{1}{4} \times 2\frac{1}{8}$ ($8\frac{1}{2} - 9\frac{1}{2}$)	$4 = 10\frac{1}{2}$		
c. 1600	Slyfield Manor, Great Bookham	$9\frac{1}{2} \times 4\frac{1}{2} \times 2\frac{1}{4}$	$4 = 10\frac{5}{8}$		
d. 1607	Old Charlton House	$9\frac{1}{2} \times 4\frac{1}{2} \times 2\frac{1}{4}$ (some $2 - 2\frac{1}{4}$)	$4 = 11$		
c. 1630	Forty Hall, Enfield—gateway	$9\frac{1}{2} \times 4\frac{1}{4} \times 2\frac{1}{4}$			
c. 1630-40	Garden House, Old Charlton	$9 \times 4\frac{1}{4} \times 2\frac{3}{8}$	$4 = 10\frac{5}{8}$		
d. 1631	Kew Palace	$8\frac{3}{4} \times 4\frac{1}{4} \times 2\frac{9}{16}$	$4 = 11\frac{1}{4}$		
d. 1631	Kew Palace—by S. doorway	$8\frac{1}{2} \times 4\frac{1}{4} \times 2\frac{1}{4}$	$4 = 10\frac{1}{2}$		
c. 1635	Raynham Hall, Norfolk	$9\frac{1}{2} \times 10 \times 4\frac{3}{4} \times 2\frac{1}{8}$	$4 = 10\frac{1}{4}$		
c. 1635	Broome Park, Denton	$9 \times 4\frac{1}{4} \times 2\frac{1}{4}$	$4 = 11$		
Before 1638	Pocock's School, Rye	$8\frac{1}{2} \times 4\frac{1}{8} \times 2$	$4 = 10\frac{1}{2}$		
c. 1637	Restoration House, Rochester	$9 \times 4\frac{1}{4} \times 2\frac{1}{4}$	$4 = 11$		
c. 1640	Balls Park, Hertford	$9 \times 4\frac{1}{4} \times 2$ (some $2\frac{1}{4}$)	$4 = 11\frac{1}{2}$		
1640	Old Sick House, Winchester College	$9\frac{1}{2} \times 4\frac{1}{4} \times 2$	$4 = 10\frac{1}{2}$		
1640	Charlton Church—porch	$9 \times 4\frac{1}{4} \times 2\frac{1}{4}$	$4 = 10\frac{1}{2}$		
	59-60, Lincoln's Inn Fields, London—gate piers	$8 \times 3\frac{3}{4} \times 2\frac{1}{4}$	$4 = 9\frac{5}{8}$		
c. 1645	Barnham Court	$9\frac{1}{2} \times 4\frac{1}{4} \times 2\frac{1}{4}$	$4 = 11\frac{1}{2}$		
c. 1654	Tyttenhanger Park, St. Albans	$9\frac{3}{8} \times 4\frac{1}{4} \times 2\frac{1}{4}$	$4 = 11\frac{1}{4}$		
d. 1665	Mackerye End, Wheathampstead	$8\frac{1}{4} \times 4 \times 2\frac{1}{4}$ (2 and $2\frac{1}{8}$)	$4 = 11$		
d. 1666 on gates	Bromley College	$9 \times 4\frac{1}{4} \times 2\frac{1}{4}$	$4 = 11\frac{5}{8}$		
c. 1672	Almshouses, Richard's Charity, Goodnestone	$9 \times 4\frac{3}{8} \times 2\frac{1}{4}$	$4 = 12$		
d. 1677	4, King's Bench Walk, London	$8\frac{1}{2} \times 3\frac{3}{4} \times 2\frac{1}{4}$	$4 = 11$		

TABLE OF BRICK MEASUREMENTS CHRONOLOGICALLY ARRANGED—*continued*

Date	Building, Place, &c.	Dimensions of Walling Bricks in inches	Courses Rise	Authority	Remarks
c. 1680	King's Head, Sissinghurst	$9\frac{1}{4} \times 4\frac{3}{8} \times 2\frac{1}{8} - 2\frac{1}{4}$	$4 = 10\frac{3}{4}$		
c. 1680	St. Peter's, Thanet—gabled brick house	$9\frac{1}{4} \times 4\frac{1}{4} \times 2\frac{1}{2}$	$4 = 12$		
1683	Holy Jesus Hospital, New- castle-on-Tyne	$9 \times 4\frac{1}{4} \times 2$ (some $9\frac{1}{2} \times 4\frac{1}{2} \times 2\frac{1}{4}$)	$4 = 10\frac{1}{4}$		
1684	School, Winchester	$8\frac{1}{2} \times 4\frac{1}{4} \times 2\frac{3}{8}$	$4 = 11\frac{1}{2}$		
c. 1687	Sarre—house with gable and initials	$9 \times 4\frac{1}{4} \times 2$	$4 = 10\frac{1}{2}$		
d. 1687	Guildhall, Rochester	$9 \times 4 \times 2\frac{1}{2}$	$4 = 12$		
d. 1688	Blue Coat School, West- minster, London	$8\frac{3}{4} \times 4 \times 2\frac{1}{2}$	$4 = 11\frac{1}{2}$		
c. 1690	Morden Hall	$8\frac{1}{2} \times 4 \times 2\frac{1}{2}$	$4 = 12$		
c. 1690	Hampton Court Palace—S. front up to 1st floor	$8\frac{1}{2} \times 4 \times 2\frac{1}{2}$	$4 = 10\frac{3}{4}$		
c. 1690	Near Canterbury, on Sand- wich Road—gate piers	$9 \times 4\frac{1}{4} \times 2\frac{5}{8}$	$4 = 11$		
d. 1691	Guilton—porch to cottage	$9\frac{1}{2} \times 4\frac{1}{4} \times 2\frac{1}{4}$	$4 = 12$		
1695	Morden College, Blackheath	$9 \times 4 \times 2\frac{1}{2}$	$4 = 12$		
d. 1697	Wren's House, West Street, Chichester	$9 \times 4\frac{1}{8} \times 2\frac{1}{8}$	$4 = 11\frac{1}{4}$		
d. 1698	Wingham—row of cottages in street	$8\frac{3}{4} \times 4 \times 2\frac{1}{4} - 2\frac{1}{8}$	$4 = 10\frac{1}{2}$		
1699-1700	46, Lincoln's Inn Fields, London	$8 \times 3\frac{3}{4} \times 2\frac{1}{2}$	$4 = 11\frac{1}{2}$		
Late 17th cent.	Sowden's Farm, Westfield	$9 \times 4\frac{3}{8} \times 2$	$4 = 10\frac{3}{4}$		
Late 17th cent.	West Stow Hall—gate piers	$9\frac{1}{4} \times 4\frac{1}{4} \times 2\frac{1}{4}$	$4 = 11\frac{1}{2}$		
c. 1700	Ormeley Lodge, Ham Common	$8\frac{1}{2} \times 4 \times 2\frac{1}{2}$	$4 = 12$		
c. 1700	Hampton Court Palace, gauged niche S. front in garden wall	$8\frac{1}{2} \times 4\frac{1}{8} \times 2\frac{3}{8}$	$4 = 10\frac{3}{4}$		Gauged work
c. 1700	Chicheley Hall, below plinth above plinth	$8\frac{1}{2} \times 4 \times 2\frac{1}{4}$ $8\frac{1}{2} \times 4\frac{3}{16} \times 2\frac{1}{4}$	$4 = 10\frac{1}{4}$ $4 = 9\frac{1}{2}$		Gauged work
c. 1700	33, Mark Lane, London, E.C.	$7\frac{1}{4} \times 3\frac{3}{8} \times 2\frac{1}{4}$	$4 = 9\frac{3}{4}$		
Early 18th cent.	Church House, Northiam	$8\frac{3}{4} \times 4\frac{1}{4} \times 2\frac{1}{8}$			
Early 18th cent.	Red House, Sawbridgeworth	$8\frac{3}{4} \times 4\frac{1}{4} \times 2\frac{1}{2}$	$4 = 11\frac{3}{4}$		
Early 18th cent.	No. 28, St. Andrew's Street, Hertford	$8\frac{1}{2} \times 4 \times 2\frac{1}{2}$	$4 = 11\frac{1}{2}$		
d. 1703	Tichborne Church Tower, Hants.	$8\frac{3}{4} \times 4\frac{3}{8} \times 2\frac{1}{4}$	$4 = 10\frac{1}{2}$		
1705	Queen Anne's Gate, London	$8\frac{1}{2} \times 4 \times 2\frac{1}{4}$	$4 = 11\frac{1}{2}$		
d. 1706	Corn Exchange, Rochester	$8 \times 3\frac{7}{8} \times 2\frac{1}{4}$	$4 = 9\frac{1}{8}$		Gauged work
c. 1710	Montagu House, Culver Street, Colchester	$8\frac{1}{4} \times 3\frac{3}{4} \times 2\frac{1}{8}$	$4 = 10$		

TABLE OF BRICK MEASUREMENTS CHRONOLOGICALLY ARRANGED—*continued*

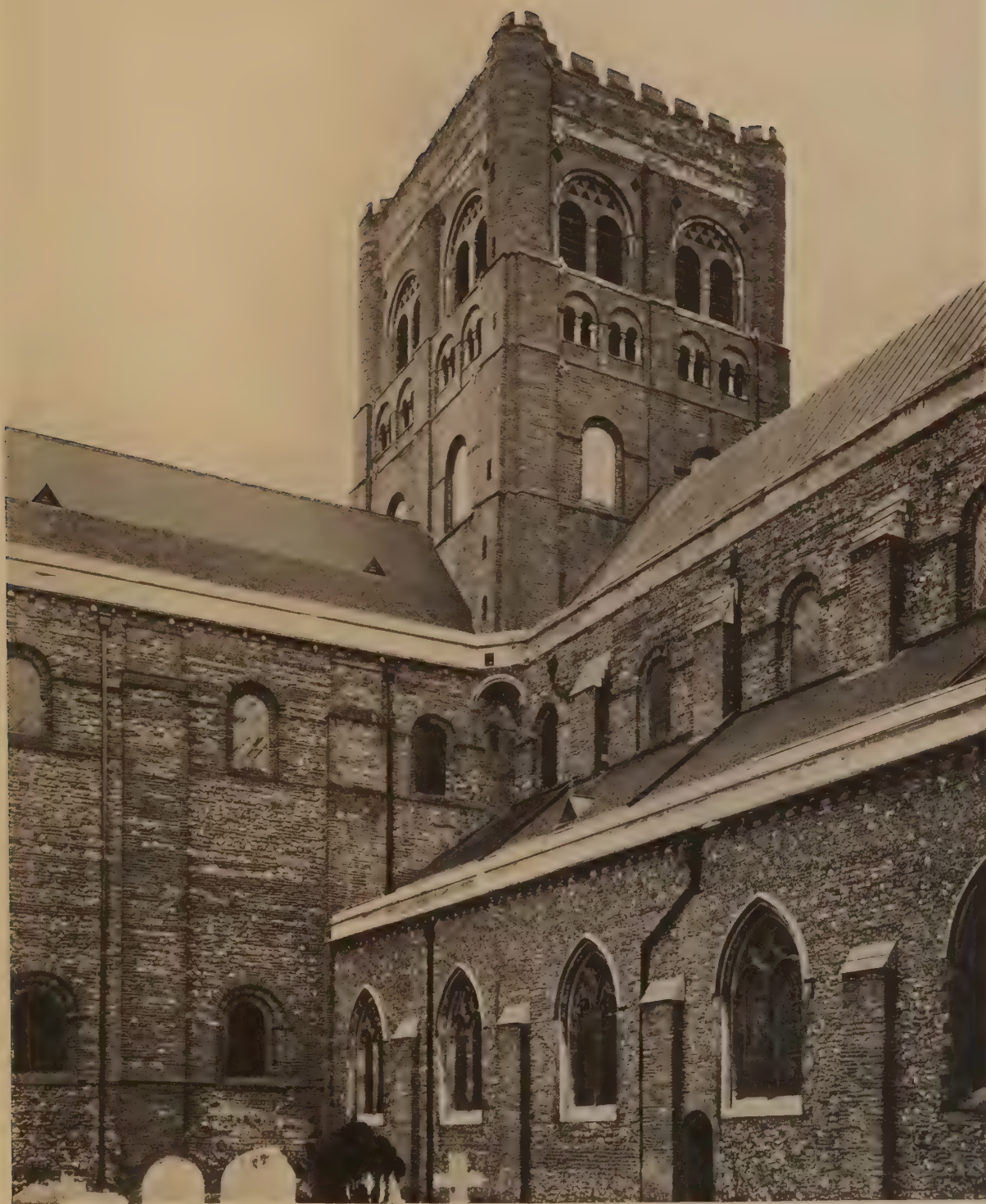
Date	Building, Place, &c.	Dimensions of Walling Bricks in inches	Courses Rise	Authority	Remarks
c. 1710	Lullingstone Castle House, Eynsford—entrance front	$8\frac{1}{2} \times 4 \times 2\frac{1}{2}$	$4=10\frac{5}{8}$		
c. 1710	Calleva House, Wallingford	$8\frac{1}{2} \times 4\frac{1}{2} \times 2\frac{1}{2}$	$4=11$		
d. 1711	Unitarian Chapel, Bury St. Edmunds	$8\frac{3}{8} \times 4\frac{1}{8} \times 2\frac{1}{8}$	$4=9\frac{1}{2}$		Gauged work
d. 1711	Westwell, Tenterden	$9 \times 4\frac{1}{2} \times 2\frac{5}{8}$	$4=12\frac{1}{2}$		
1713	Pallant House, Chichester	$8\frac{1}{2} \times 4 \times 2\frac{5}{8}$	$4=11\frac{3}{8}$		
d. 1713	Larkfield, Bradbourne	$8\frac{5}{8} \times 4\frac{1}{8} \times 2\frac{3}{8}$	$4=11$		
d. 1717	Convent, Longbridge, Farnham	$8\frac{1}{2} \times 3\frac{3}{4} - 4\frac{1}{2} \times 2 - 2\frac{1}{2}$	$4=10\frac{1}{2}$		Gauged work
1717	Lockleys, Welwyn	$9 \times 4\frac{1}{8} \times 2\frac{3}{8}$	$4=12$		
d. 1718	Willmer House, West Street, Farnham	$9 \times 4\frac{1}{2} \times 2\frac{3}{8}$	$4=9\frac{1}{2}$		Gauged work
c. 1720	Wrencote, Croydon	$8\frac{1}{2} \times 3\frac{3}{4} \times 2\frac{1}{2}$			
c. 1725	Finchcocks, Goudhurst	$9 \times 4\frac{1}{2} \times 2\frac{1}{2}$	$4=12\frac{1}{2}$		
d. 1729	Womenswold Church	$8\frac{1}{2} \times 4 \times 2\frac{3}{8}$			
c. 1730	Sergeant's Inn, Fleet Street, London	$8\frac{1}{2} \times 4 \times 2\frac{1}{2}$	$4=12\frac{1}{2}$		
c. 1730	31, Old Burlington Street, London	$8\frac{1}{2} \times 4 \times 2\frac{1}{2}$	$4=11\frac{1}{2}$		
c. 1730	Watlington—house next to one with Doric doorway	$8\frac{1}{2} \times 4\frac{1}{8} \times 2\frac{1}{2}$	$4=11\frac{1}{2}$		
c. 1730	Watlington—house with Doric doorway	$9 \times 4\frac{3}{8} \times 2\frac{3}{8}$	$4=12\frac{1}{2}$		
b. 1736	Manchester and District Bank, 35, King Street, Manchester	$9 \times 4\frac{1}{2} \times 2\frac{3}{8}$	$4=12$		
c. 1740	Underdown Farm House, Eddington	$8\frac{1}{2} \times 4 \times 2\frac{1}{2}$	$4=12$		
d. 1744	Church House, Beckley	$8\frac{1}{2} \times 4\frac{1}{8} \times 2\frac{1}{2}$	$4=11$		
c. 1750	Arundel—house in centre of Strand	$9 \times 4\frac{1}{2} \times 2\frac{3}{8}$	$4=11\frac{1}{2}$		
1752	45, Lincoln's Inn Fields, London	$8\frac{1}{2} \times 3\frac{3}{4} \times 2\frac{1}{2}$			
c. 1750	39, West Street, Farnham	$9 \times 4\frac{1}{2} \times 2\frac{1}{2}$	$4=10\frac{7}{8}$		
1767	Albany, Piccadilly, London	$8\frac{1}{2} \times 4 \times 2\frac{1}{2}$	$4=12$		
c. 1780	Arundel—house S. side of Maltravers Street	$8\frac{5}{8} \times 4 \times 2\frac{1}{2}$	$4=10\frac{5}{8}$		
c. 1790	Arundel—house with pediment S. side of Maltravers Street	$9 \times 4\frac{7}{8} \times 2\frac{1}{8}$	$4=10\frac{1}{8}$		
Late 18th cent.	6, Higham Place, Newcastle- on-Tyne	$8\frac{1}{2} \times 4\frac{1}{8} \times 2\frac{3}{8}$	$4=11\frac{1}{4}$		
18th cent.	37, Crouch Street, Colchester —venetian window	$8\frac{1}{2} \times 4 \times 2\frac{3}{8}$	$4=11\frac{1}{2}$		
2nd half of 18th cent.	Liverpool—houses in Rodney Street	$9\frac{1}{2} \times 4\frac{1}{2} \times 3$	$4=14$		



COLCHESTER CASTLE. c. 1078. Flint rubble and septaria. Stone and brick quoins and brick lacing. Courses of Roman bricks re-used in the Roman manner. Often such lacing courses are herringbone work. (See detail of Roman wall, p. 357.)



COLCHESTER. ST. BOTOLPH'S PRIORY CHURCH. 12th century. W. elevation. Roman brick doorways (the moulded detail is of stone) and intersecting arches, also of Roman bricks, re-used.



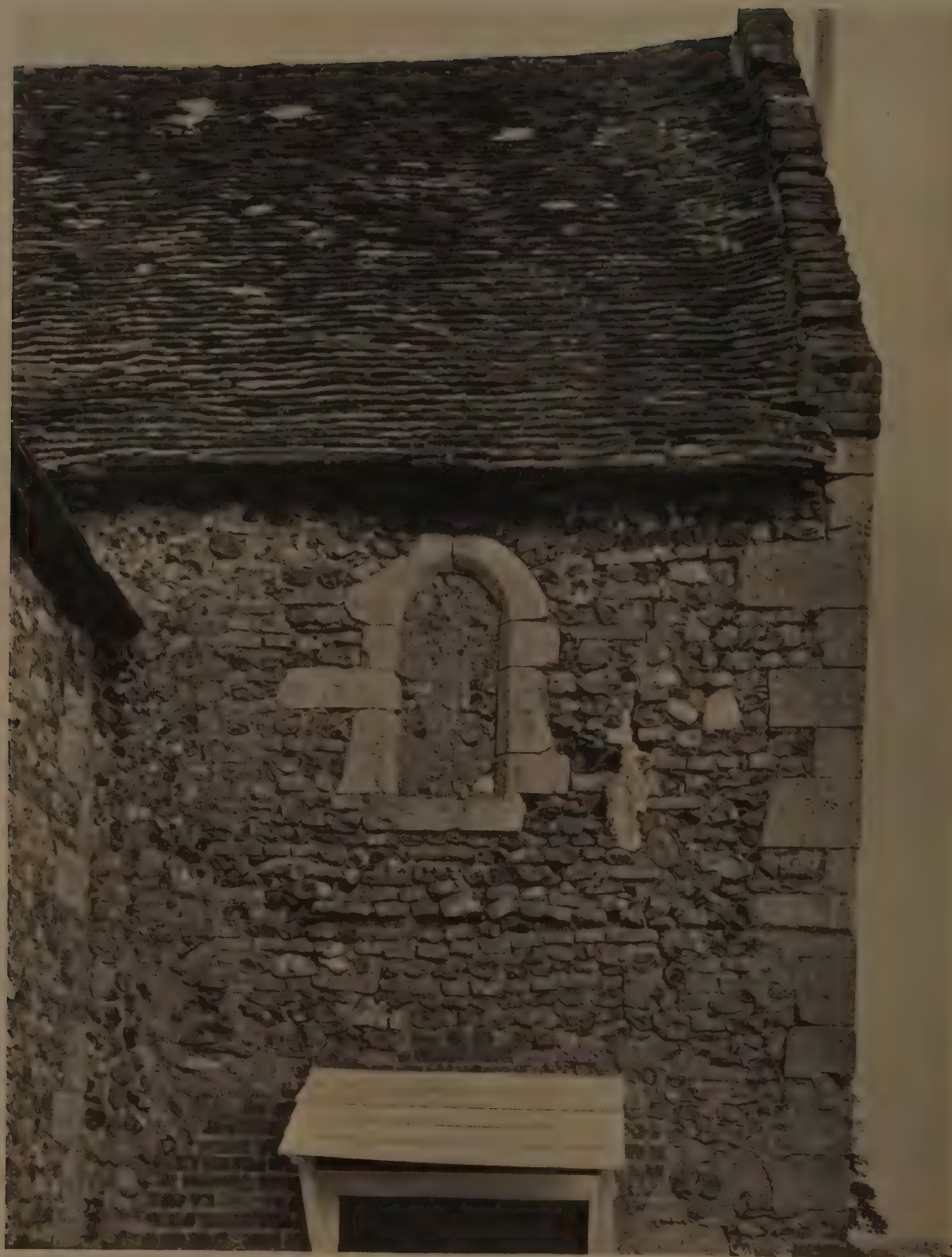
ST. ALBANS CATHEDRAL. 11th century. Roman bricks, from the ruins of the Roman city of Verulamium, re-used. These long thin bricks, laid with thick joints, produce a wall surface of good texture.



ESSEX. LITTLE COGGESHALL. LITTLE COGGESHALL ABBEY. Detached building. c. 1200. Flint rubble and brick walls; brick dressings. Bricks, $12 \times 5\frac{1}{2} \times 1\frac{3}{4}$ ins., vary slightly, and are quite distinct from Roman bricks. Lancet windows in two orders. (See also interior of windows, p. 283.)



LITTLE COGGESHALL ABBEY. ST. NICHOLAS CHAPEL. c. 1220. Brick quoins, windows, &c. Bricks, $12 \times 6 \times 1\frac{3}{4}$ ins. (See also interior of E. window, p. 284.) This building and the others at this Abbey are very early examples of mediaeval brickwork. Although made in moulds the bricks are not of the Flemish character which we find later at Little Wenham Hall, &c.



SALMESTONE GRANGE, MARGATE. 13th century. Brickwork and flint rubble with stone quoins and window dressings. The bricks are of Flemish dimensions, muddy yellow colour—some pale pink. Bond irregular. Bricks, $9\frac{1}{4} \times 4\frac{3}{4} \times 1\frac{1}{8}$; $8 \times 3\frac{3}{4} \times 1\frac{3}{4}$ ins.



SUFFOLK. LITTLE WENHAM HALL. c. 1260-80. Probably the oldest brick dwellinghouse in England. Bricks, $9 \times 4\frac{1}{4} \times 2$ ins.; four courses rise 10 ins. Colour mostly muddy cream and greenish-yellow, occasional pinks and reds. This is an early example of the Flemish type of brick.



YORKS. NORTH BAR, BEVERLEY. c. 1409-10. Irregular bond. The only moulded bricks are the chamfered bricks used for openings and cut for voussoirs. The finials of label and centre arched opening are carved brick. (Details of costs, &c., pp. 17-21.) Bricks, $10\frac{1}{2} \times 5\frac{1}{2} \times 2$ ins. These dimensions are between those of the early mediaeval and Flemish bricks.



Photo by H. Carlton, Horncastle.

LINCS. TATTERSHALL CASTLE. Built by Ralph, Lord Cromwell, 1431-49; restored in 20th century. Bricks, Flemish type, $8 \times 4 \times 2$ ins. (average) of Lincolnshire clay. Although the window dressings are of stone there is much moulded brickwork within.



Photo by H. Carlton.
TATTERSHALL CASTLE. Interior before restoration of parapet, shewing brick corbel course of tower and the use of brick, unmoulded except for plain chamfer.



CAISTER CASTLE, near YARMOUTH. After 1424, when the Duc D'Alençon was captured, and before 1459, when Fastolf died. Reputed to have been built by the Duc D'Alençon for Sir John Fastolf as the price of the Duc's ransom. Simply moulded bricks are used for the corbels. Bricks, $8\frac{1}{2} \times 4\frac{1}{4} \times 2\frac{1}{4}$ ins. (some $9\frac{1}{2}$ and 8 ins.); four courses rise 11 ins. (some 10 and 12 ins.). Colour: Inside—Light and deep purply-reds. Outside—Light and deep purply-reds, and many buff and cream.



ESSEX. FAULKBOURNE HALL. N. front and N.E. tower. Probably built by Sir Thomas Montgomery before 1494. The detail is more ornate than other 15th century castles. Bricks, $8\frac{1}{2} \times 3\frac{3}{4} \times 2$ ins.; four courses rise $10\frac{1}{2}$ ins. Colour, rich reds. Compare the oriel window with those at Rye House, which some authorities date c. 1520.



SUSSEX. HERSTMONCEAUX CASTLE. Built c. 1445-6 by Sir Roger Fiennes. Bricks, $9\frac{1}{2} \times 4\frac{3}{4} \times 2\frac{1}{8}$ ins.; joint, $\frac{1}{2}$ in.; four courses rise $11\frac{1}{4}$ ins. All dressings of stone.



HERSTMONCEAUX CASTLE. ENTRANCE GATEHOUSE (restored). The machicolation corbels are of stone. At Tattershall and Caister they are of brick.



OXON. EWELME ALMSHOUSES. 1436-46. The pointed arch has recessed panel with cusping in moulded brick as in contemporary buildings at Bruges.



THANET. CARLINGE, DENT DE LION, ENTRANCE GATEHOUSE. Late 15th century. Wallings four courses knapped flints alternating with four courses bricks. Bricks, $8\frac{3}{4} \times 4\frac{1}{4} \times 2$ ins.; four courses rise $9\frac{1}{2}$ ins. Colour, red (some yellow) bricks.



HERTS. HATFIELD. BISHOP OF ELY'S PALACE. c. 1480. N. front. Interior includes large open-roofed hall. There is unusual variety of diaper patterns. (See details, p. 440.)



HATFIELD. BISHOP OF ELY'S PALACE. S. front.



HATFIELD. BISHOP OF ELY'S PALACE. Angle view of N. front, shewing mouldings, &c.



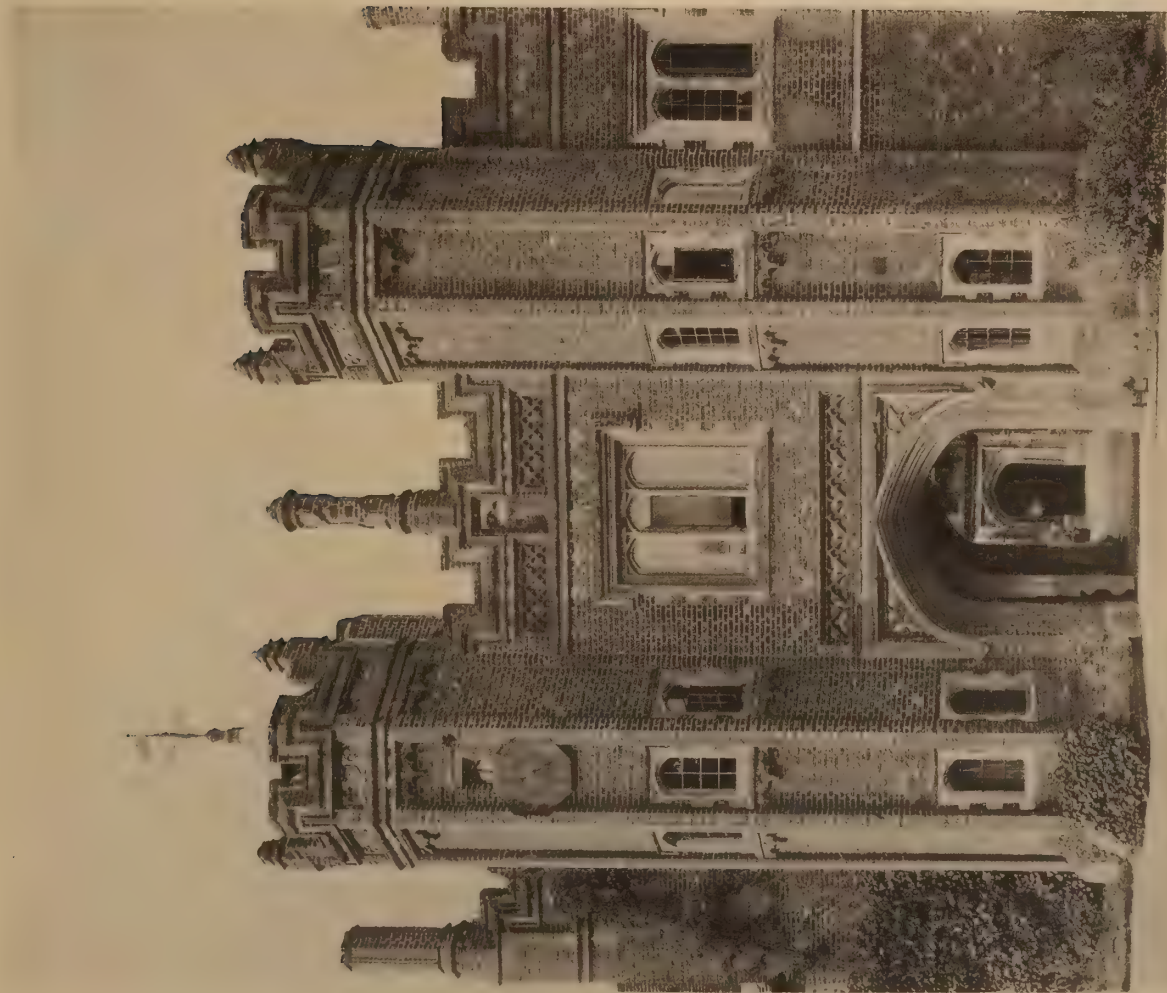
NORFOLK. OXBURGH HALL from N.W. Built by Sir Edmund Bedingfeld, Kt. Licence d. 1482. Still owned and occupied by the same family—now by Sir Henry E. Bedingfeld, Bt. Many alterations were made c. 1780.



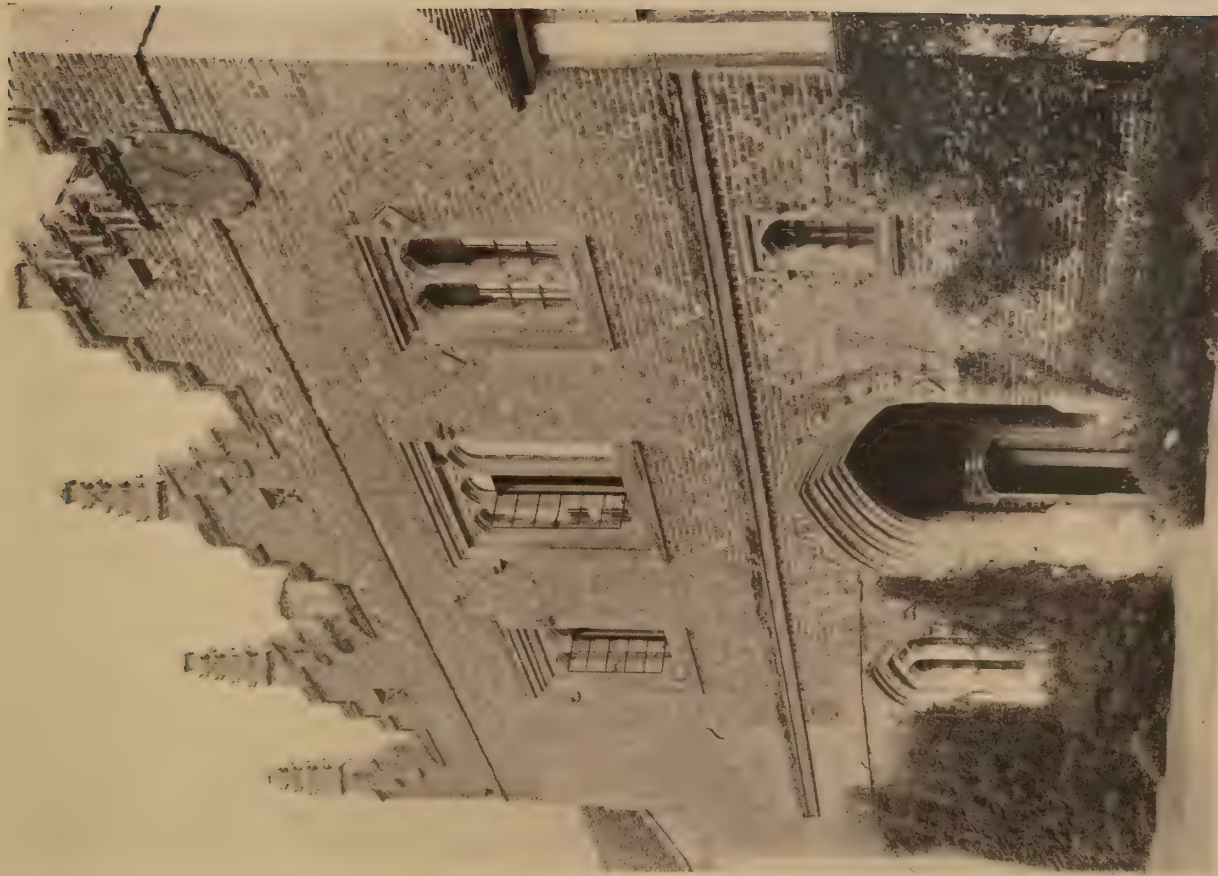
OXBURGH HALL. ENTRANCE GATEHOUSE, 1482. BRIDGE, 18th century.



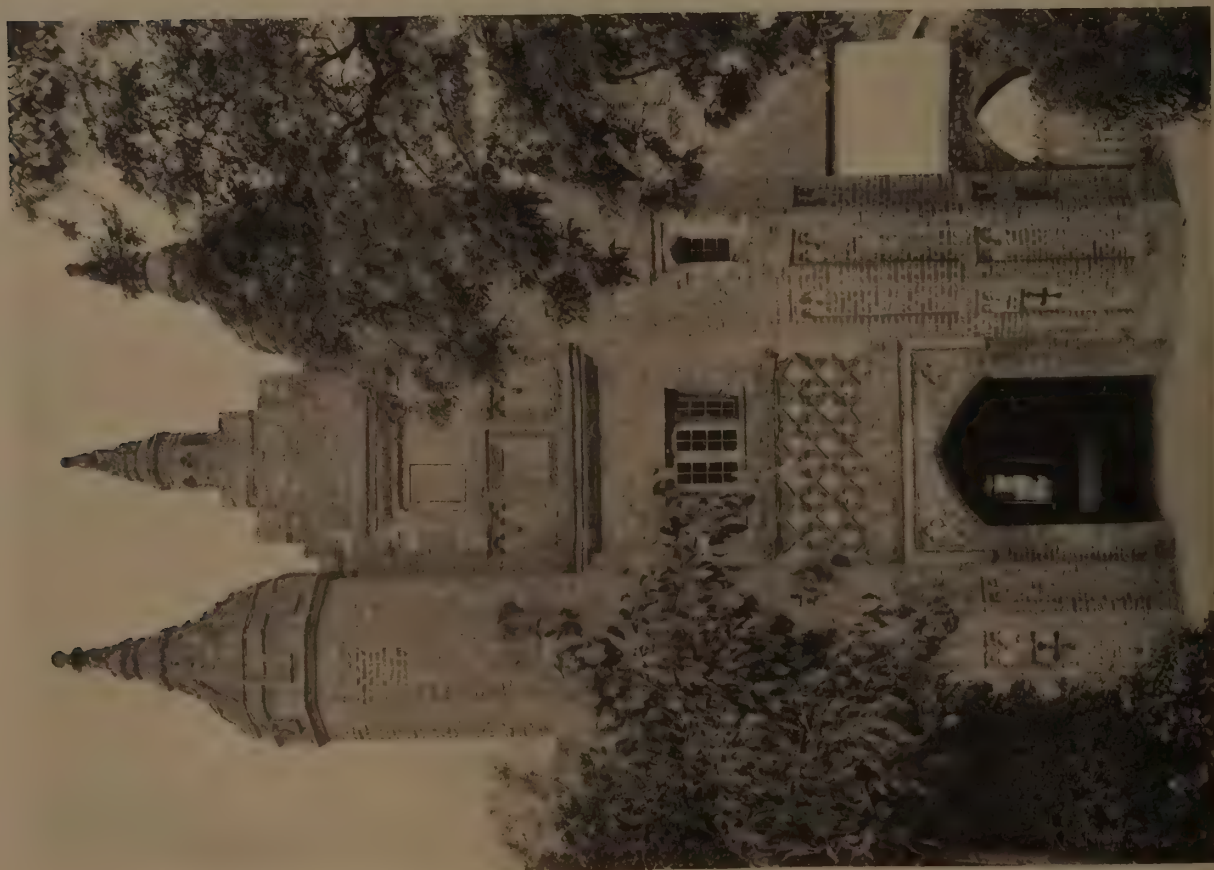
OXBURGH HALL. GATEHOUSE, 1482. Entrance from within court. Like other gatehouses, the towers of each elevation are of different design.



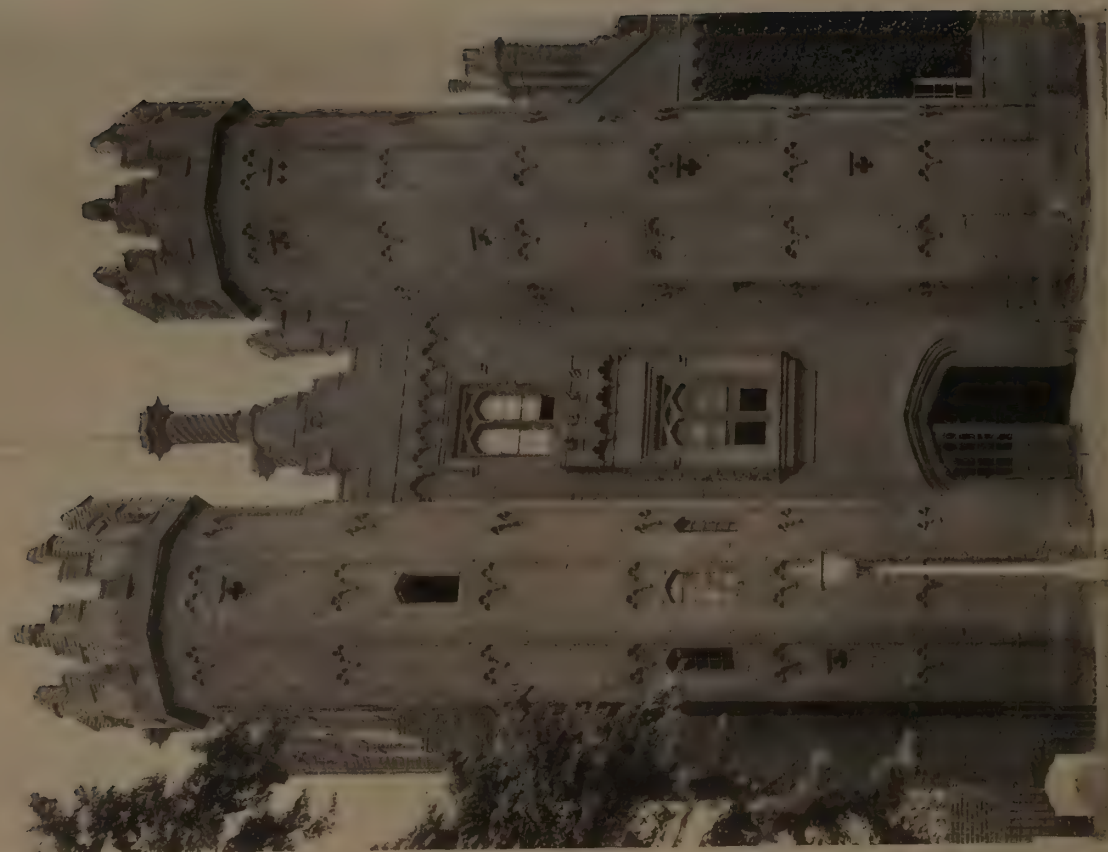
SUFFOLK. STOKE-BY-NAYLAND. GIFFORD'S HALL. Early 16th century. Gatehouse entrance to court. Spandrels and panels filled with brick tracery. Brick tablets moulded with arms.



GIFFORD'S HALL. Gatehouse entrance from courtyard.



SUFFOLK. WEST STOW HALL. Gatehouse. 1520-33. Brick tracery over arch, crocketed brick pinnacles, and terra-cotta finials.



SUFFOLK. HADLEIGH TOWERS. Gatehouse built by Wm. de Pykenham, c. 1490. Diapers, purply-black. Characteristic panels with trefoil-cusped heads formed of two bricks.



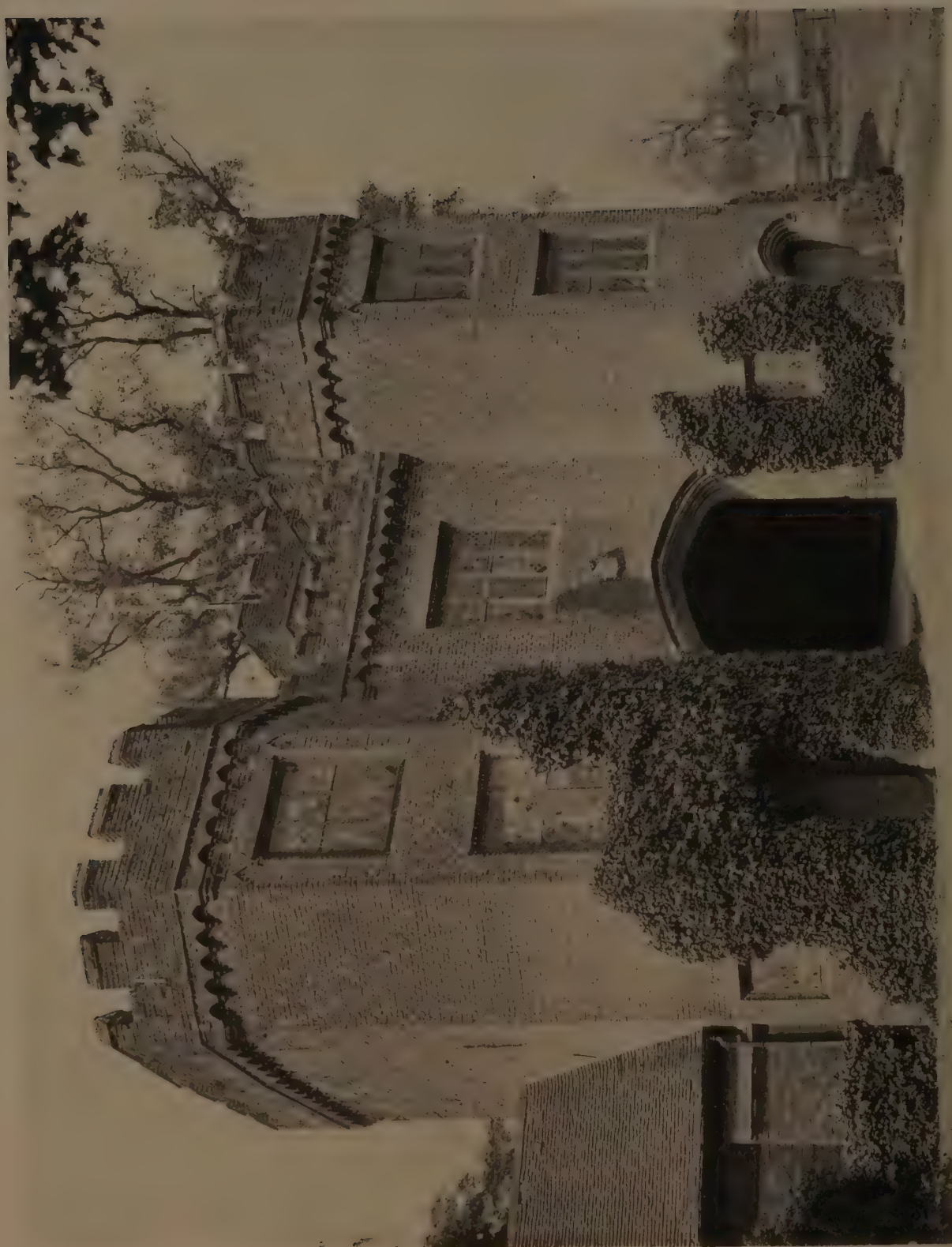
NORFOLK. GREAT SNORING RECTORY. Early 16th century. The windows and chimneys are modernised. A mixture of Gothic and Renaissance details. Brick tablets in the manner of terra-cotta shew the new influence. The detail of turret was probably executed in lumps of soft brick, carved.



HERTS. RYE HOUSE. Gatehouse, *temp* Faulkbourne Hall. The oriel windows are somewhat similar to those at Faulkbourne Hall; also the units of the brick corbel-table arcades.



KENT. LULLINGSTONE CASTLE. Gatehouse, first half of 16th century. Outer elevation.



LULLINGSTONE CASTLE. GATEWAY. First half of 16th century. Inner front. The bricks forming the arches of the corbel-table are not cusped. (See detail, p. 333.)



ESSEX. SANDON. ST. ANDREW'S CHURCH. c. 1502. Brick porch; brick tracery in W. window; brick diaper crosses, &c. The corbel-table arcading of tower is of unmoulded bricks; compare with that of porch. (See detail of porch, p. 261.)



SURREY. FARNHAM CASTLE. c. 1508. Walls covered with diamond-diapers. Brick machicolations of unusual design and corbel-table in moulded brick.



ESSEX. TOLLESHUNT MAJOR. ST. NICHOLAS CHURCH. Early 16th century tower. Note change in buttress sections at third stage.



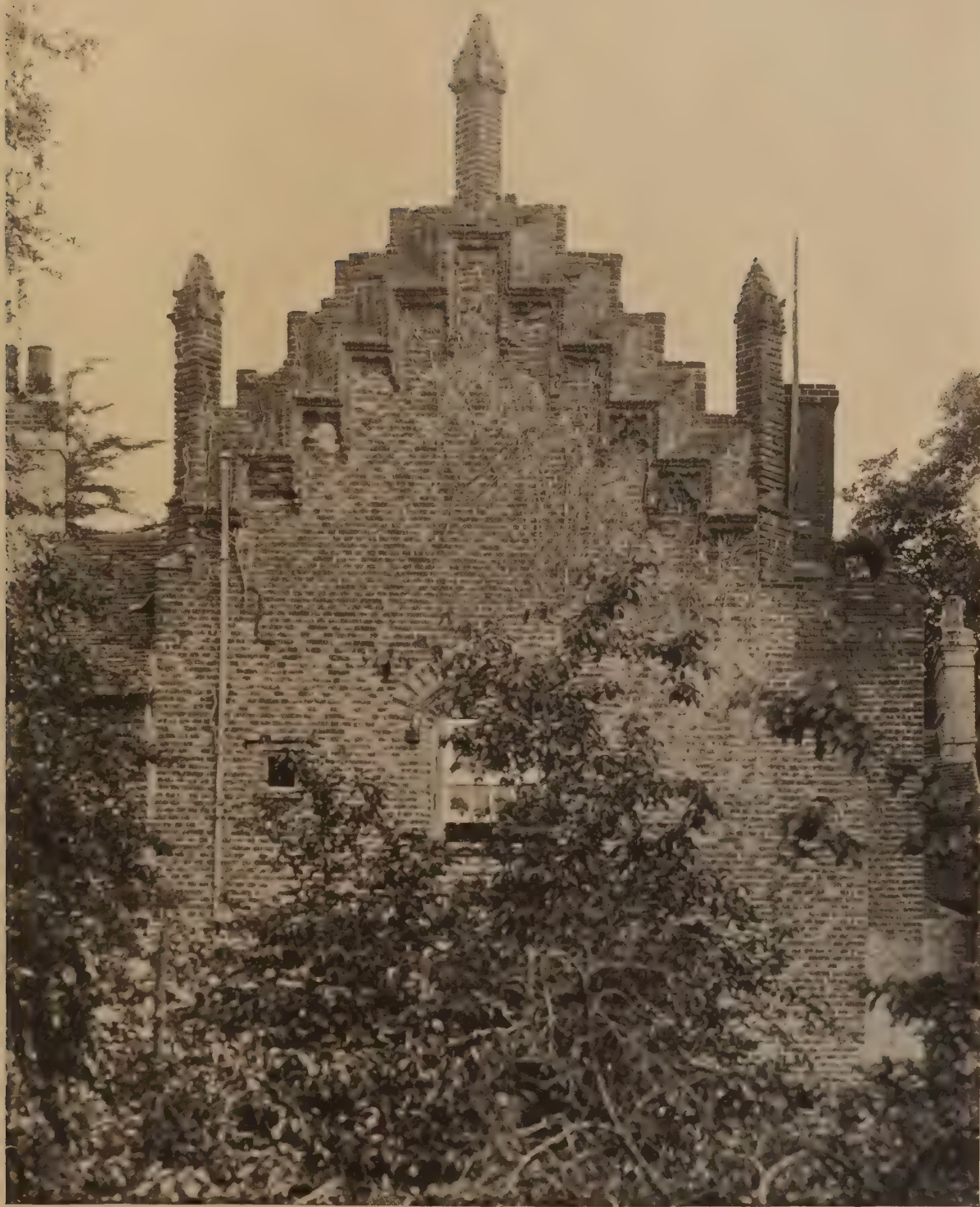
LAYER MARNEY CHURCH. c. 1520. Diaper work in tower. Porch, windows, &c., rendered with plaster to simulate stone.



ESSEX. COLNE ENGAINE. ST. ANDREW'S CHURCH. Brick upper part of tower early 16th century. The W. buttresses are not at the angles. Band of tracery of one cut brick above corbel-table arcading.



ESSEX. CASTLE HEDINGHAM CHURCH. Brick porch, crenellations and tracery, c. 1520. Brick tower, 1616.



ESSEX. BRADFIELD HALL. Gable. c. 1520. Particularly fine crowstepping with cusp-traceried corbels. Crocketed brick finials.



NORFOLK. METHWOLD. The Old Vicarage. Gable and Circular Chimney. Early 16th century. The diamond and zigzag brickwork in relief is of same pattern as in diaper work at Layer Marney and elsewhere. The labels over windows are cable pattern in moulded brick.



MIDDLESEX. HAMPTON COURT PALACE. The principal entrance. c. 1520. Nowhere is there more variety of moulded brick chimneys having the greatest interest, notwithstanding much necessary restoration and repair.



HAMPTON COURT PALACE. c. 1520. The Clock Court, looking through the archway to the Great Court. Terra-cotta Wolsey's arms. Terra-cotta busts of Roman Emperors.



ESSEX. LAYER MARNEY TOWERS OR HALL. N. front. Cusped windows of terra-cotta.
Square towers instead of octagonal as in S. front.



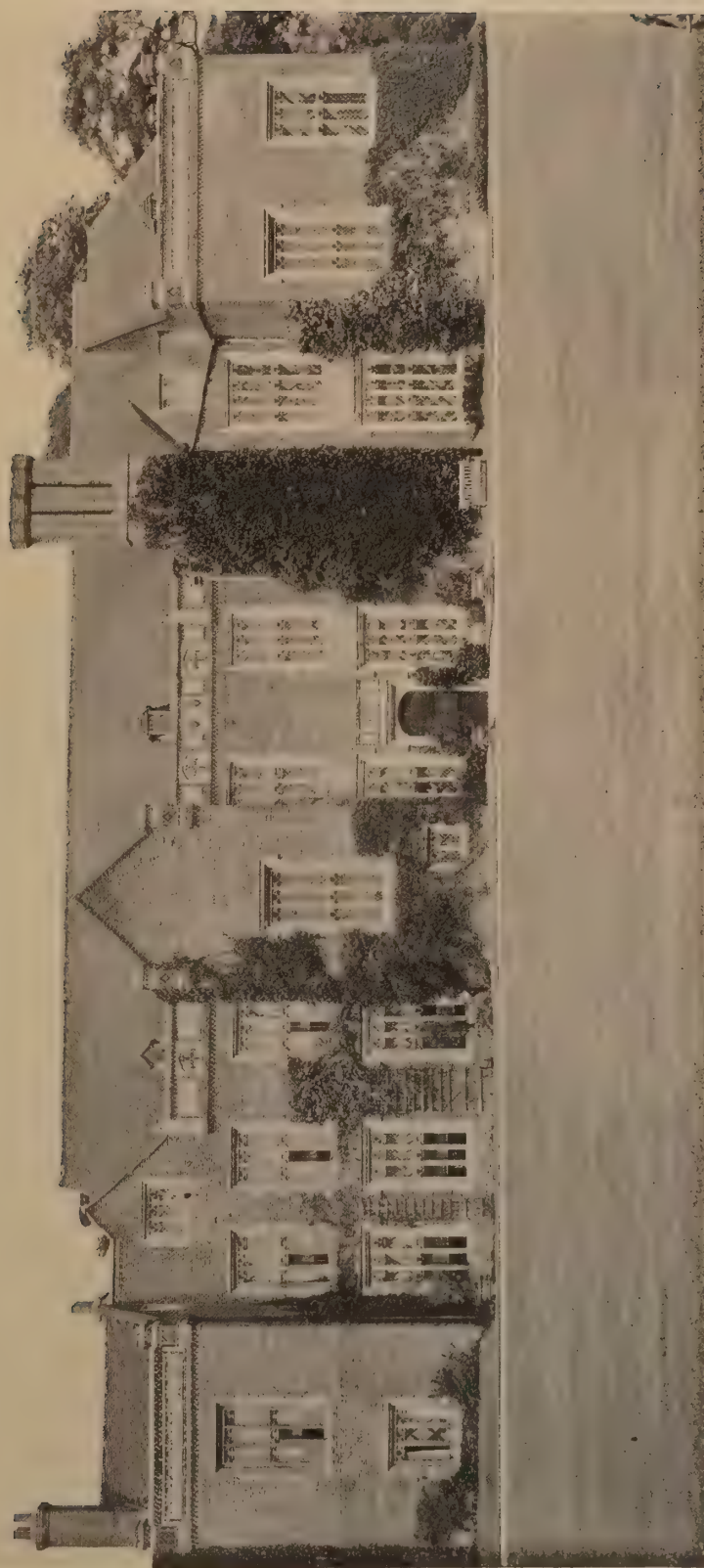
ESSEX. LAYER MARNEY. S.W. angle of Layer Marney Towers or Hall. c. 1520.
Built by Henry, Lord Marney. Brick with terra-cotta transom windows and
parapets, which are the work of Italian workmen.



ESSEX. LAYER MARNEY TOWERS OR HALL. S.E. angle. Cusped windows and tower
parapets of terra-cotta by Italian workmen.



SUTTON PLACE, near GUILDFORD. N. front. 1523-7. Built by Sir Richard Weston. Brick walling. Terra-cotta dressings and ornament of many shades. The fourth side of quadrangle, including the entrance gateway and towers, was demolished in 1782. The elevations and ornaments are symmetrical, but the details are Gothic, although executed in the Italian manner in terra-cotta. This beautiful house is unique and may be regarded as the summit of terra-cotta achievement in England.



SUTTON PLACE, near GUILDFORD. S. elevation. The Renaissance detail is similar to that of the quadrangle elevations, but the same symmetry has not been maintained.



SUTTON PLACE, near GUILDFORD. Principal elevation to quadrangle looking N. The entrance to the hall is placed in the centre, and not at one end of the apartment as usual at this period.



SUTTON PLACE, near GUILDFORD. Angle view of principal elevation to quadrangle, shewing detail and projections. An instructive instance of Gothic builders' adoption and combination of new details with traditional forms.



SUFFOLK. HENGRAVE HALL, near BURY ST. EDMUNDS. Built by Sir Thomas Kitson and finished 1538. A stone building, the walling of central portion being built in creamy buff brick nearly the same colour as the stone. The quality of surface obtained by: (1) The small unit; (2) The texture of the rough-surfaced brick is a pleasing variation from the ashlar work. This is a rare but effective association of such coloured brick and ashlar. Red brick has been used for chimneys.



NORFOLK. EAST BARSHAM MANOR HOUSE. Formerly called Wolterton Manor House. c. 1535. Built by Sir Wm. Fermor. S. elevation of Gatehouse. The coat of arms (of carved brick) is that of Henry VIII. (See detail, p. 263.) The ornaments of parapet, string and turret finials are of moulded brick, miscalled terra-cotta.



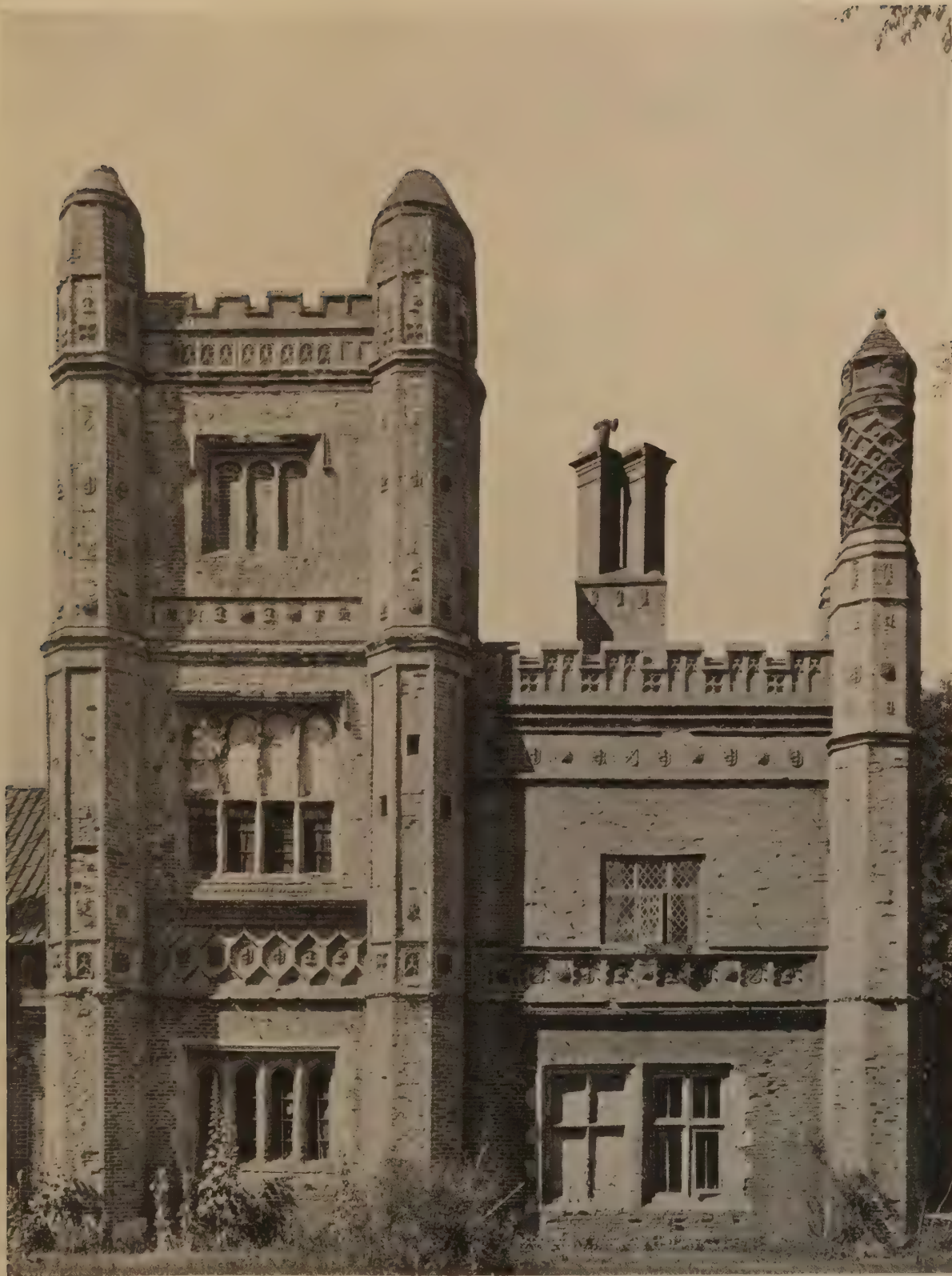
EAST BARSHAM MANOR HOUSE. c. 1535. Entrance Gatehouse. N. elevation to quadrangle, photographed from within porch of house. The crocketting, finial and coats of arms are carved in soft brick. The ornaments of string and parapet are of moulded brick.



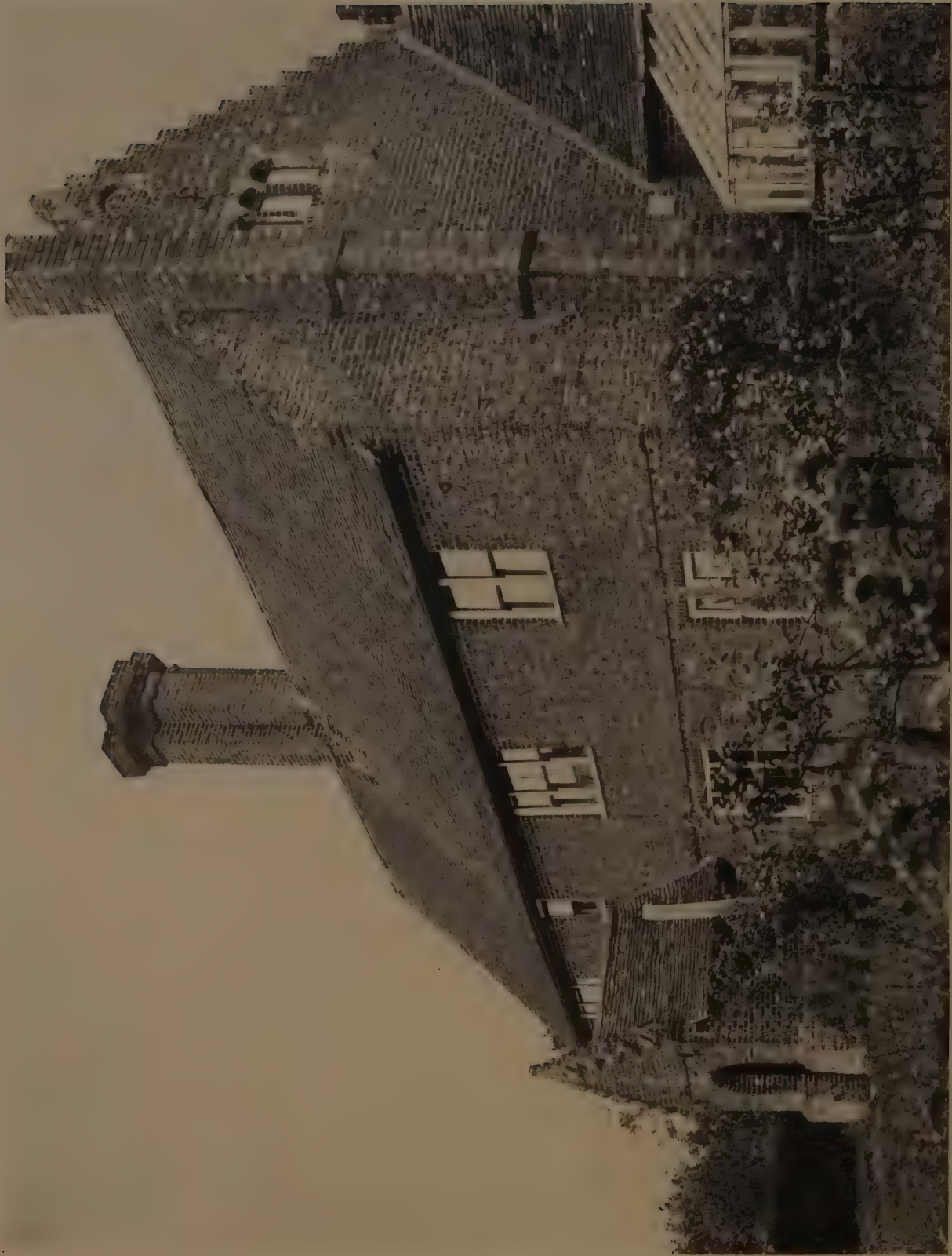
EAST BARSHAM MANOR HOUSE. Built by Sir Henry Fermor, c. 1525. Entrance photographed from within gatehouse. Ashlar is used for portions of the turrets, for the doorway and for the coat of arms. On the right of illustration is a portion of the tower in the same elevation.



EAST BARSHAM MANOR HOUSE. W. end of S. elevation. Porch and part of tower-turret. c. 1525.



EAST BARSHAM MANOR HOUSE. The Tower and W. end of S. elevation. c. 1525. Many brick tablets bearing various devices in relief are built in with the wallings and in strings and panels. The turret on right is the only original, complete one.



KENT. TENTERDEN. BRUNGER'S FARM. c. 1540.



KENT. EAST PECKHAM. ROYDON HALL. Entrance Gateway, Angle Towers and Connecting Wall. c. 1535. The house has been modernised; the re-building of gables, chimneys, &c., has been done so mechanically as to destroy all charm and brickwork character. The gateway, wall and towers of the courtyard are still of fortified design.



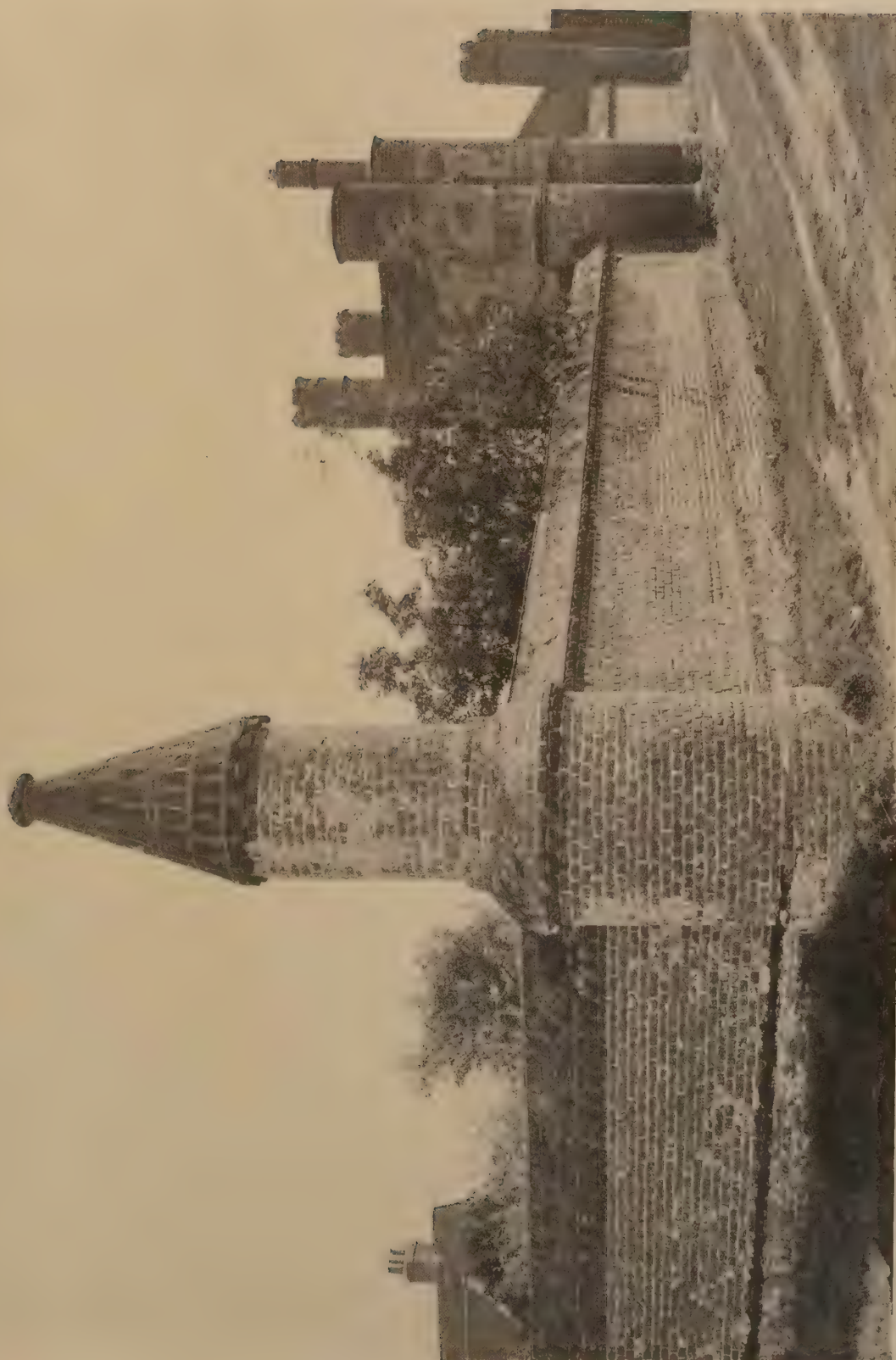
ESSEX. LITTLE LEE, or LEIGHS PRIORY. Inner Gatehouse from E. After 1536. The diaper work and moulded brick chimneys are especially good.



KENT. TENTERDEN. Well House at Hales Place. c. 1540. An excellent example of good architectural results achieved by simple means. Only two moulded bricks are used.



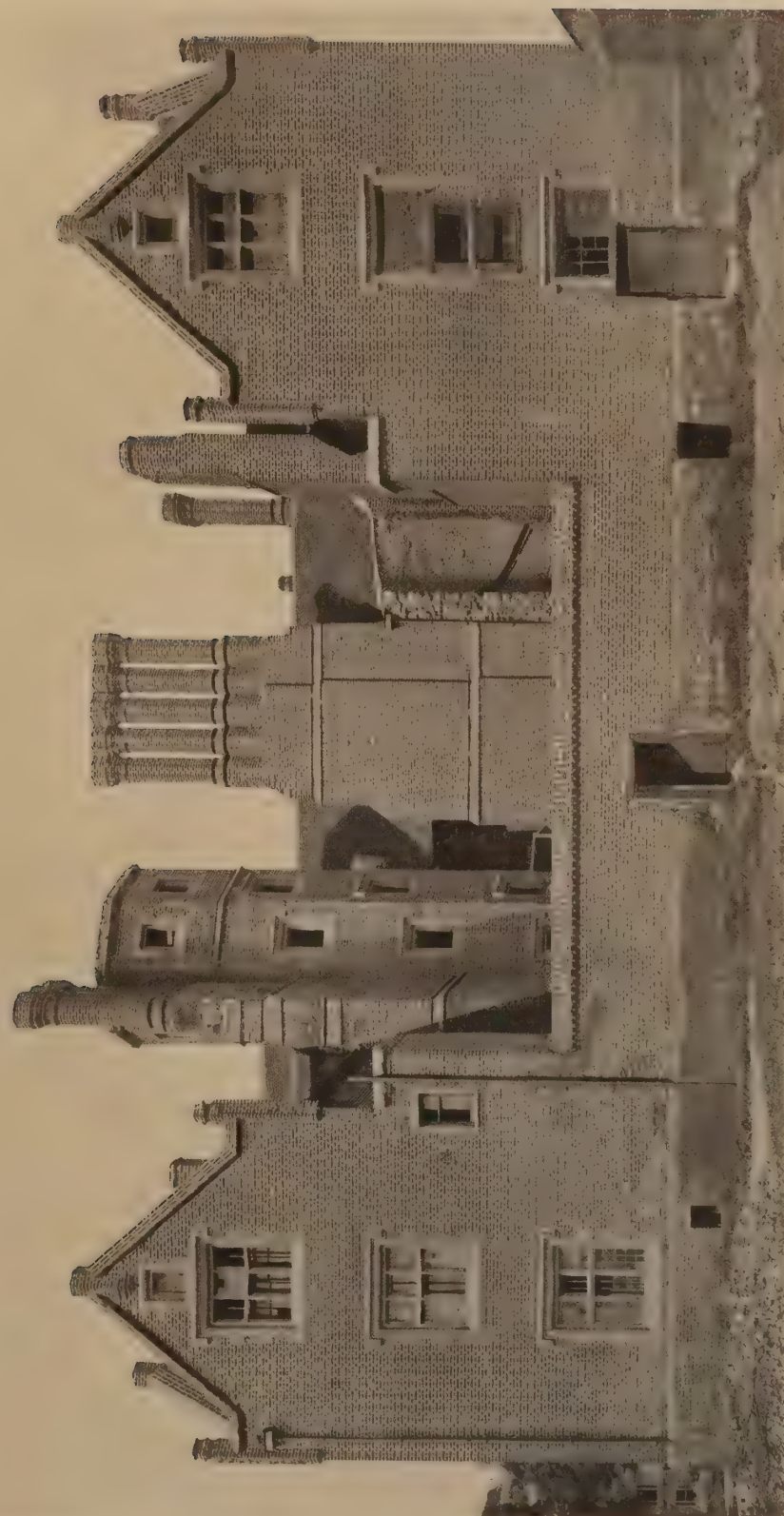
NORFOLK. GREAT CRESSINGHAM PRIORY. c. 1345. The traceried panels are of terra-cotta. The building is much mutilated.
No doubt the angle turrets had suitable finials. (Detail, p. 346.)



ESSEX. TOLLESHUNT MAJOR. BECKINGHAM HALL. b. 1546. Courtyard Wall, Turret, Gatehouse, and Gateway. Gateway towers are rendered with plaster in geometric patterns in black and white.



ESSEX. BARKING. EASTBURY MANOR HOUSE. S.W. angle. c. 1550, possibly later. An early example of the Elizabethan type of Manor House. The hall no longer has an open roof, but is celled with an apartment over. Some of the gables are built in English cross bond, producing a diamond pattern. Base of tower, Bricks, $9\frac{3}{4} \times 4\frac{1}{2} \times 2\frac{1}{2}$ ins.; four courses rise $12\frac{1}{4}$ ins. The recent pointing has increased the thickness of the joints almost to 1 in., which causes the bricks to appear only 2 ins. thick.



EASTBURY MANOR HOUSE. S. front. The wall encloses a small court. The turrets (one ruinous) contained staircases with brick handrail, which can be seen in the remains of one. The gathering of flues into large stacks is typical, and shews skilful planning. The windows are treated with plaster (restored) to simulate stone. The finials of gables were of same character as those at Little Hautbois Hall, p. 160.



NORFOLK. LITTLE HAUTOBOIS HALL. c. 1555. The chimney flues are gathered into two stacks of octagonal shafts. The window mullions, jambs, &c., are plastered (restored) to represent stone. The dormer windows have gables flanked and finished with cut brick finials, which give character to the design. (Compare with Eastbury Manor House, pp. 158-9.)

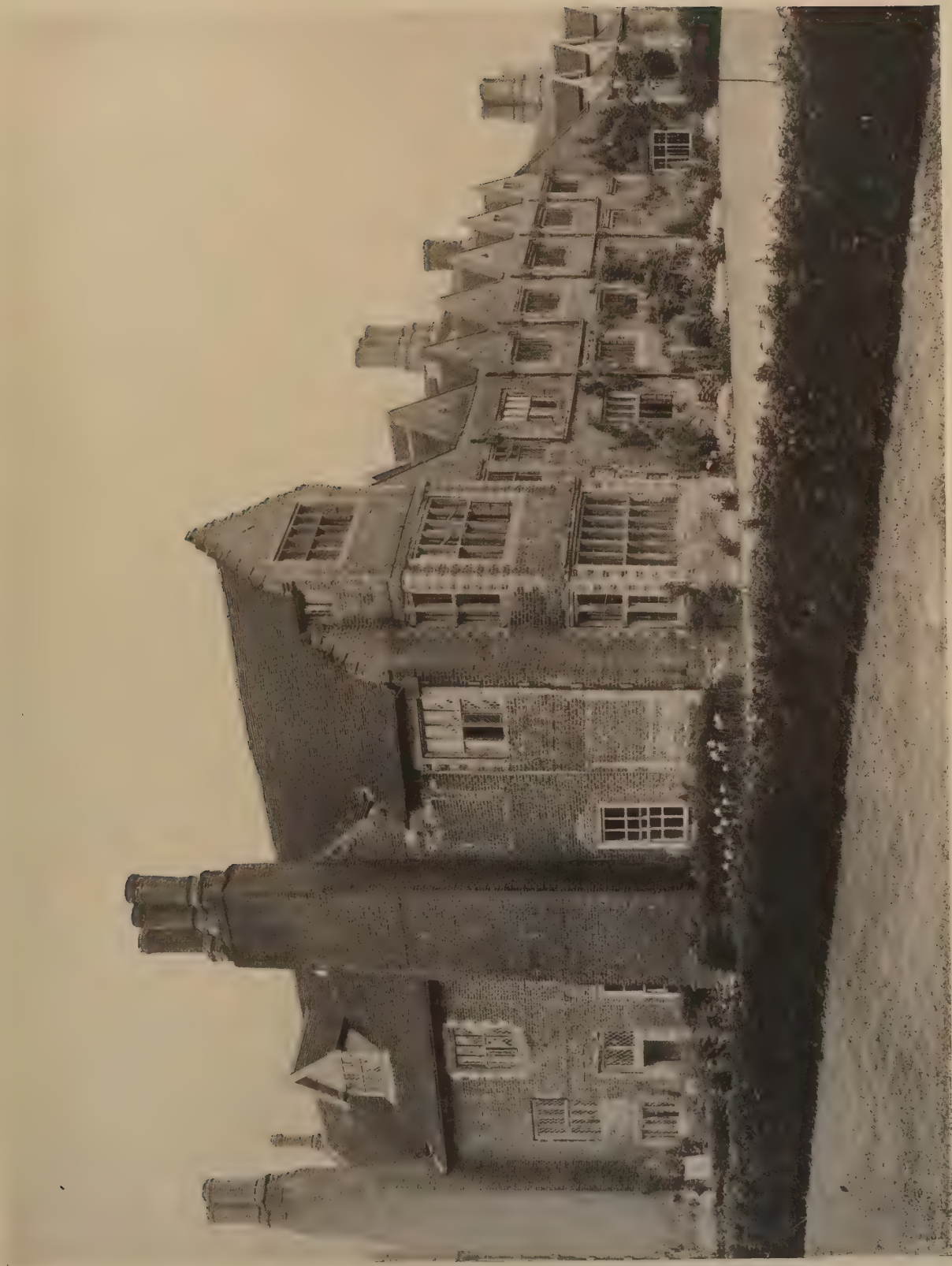


Photo by H. J. Jarman, Bury St. Edmunds.

ESSEX. MOYNE PARK, c. 1580. A fine example of a moderate-sized Elizabethan House of brick where stone has been used sparingly for quoins, doorway and window dressings. In it we see the type from which great palaces like Hatfield developed in the early part of the next century.



KENT. COBHAM HALL. Part of S. wing, dated 1584. The roof is behind a parapet.



NORFOLK. BRECCLES HALL, c. 1580. A picturesque effect simply obtained by gables, external chimneys, with mullioned and transomed windows. Windows and quoins of bays are cement-rendered to represent stone, mostly in original state.



KENT. WICKHAMBREAU, Post Office. Earlier chequer work in stone and knapped flints. Repaired and altered (probably in 16th century) in brick.



SURREY. GREAT BOOKHAM. Outbuilding at Slyfield Manor. c. 1600 or earlier. The treatment of labels and strings is unusual but effective. The coupled Ionic pilasters, caps and ornaments are of cut brick.



SURREY. GREAT BOOKHAM. SLYFIELD MANOR. c. 1600. The gable at one end rises from a cornice above Doric pilasters. The long front on the right is divided vertically by seven Ionic pilasters. At first floor level each of these pilasters bears a shield on which is an armorial device, and above each shield is a fleur-de-lis carved out of soft brick, p. 167. The whole is carried out in cut brickwork except the Ionic capitals, which probably are terra-cotta. The ill-proportioned modern windows mar the effect. The original casements were probably similar to that at first floor of the outbuilding, p. 165.



SLYFIELD MANOR. c. 1600. Detail of Ionic pilasters.



KENT. CHARLTON HOUSE. d. 1607. The sombre appearance of the brickwork is due to the dark pointing of joints. The bricks vary in colour from deep to bright reds. This may be regarded as a development of the Moyns Park type (p. 161), from which the gables have disappeared, together with the steep roof. A pierced parapet and Renaissance doorway have been introduced.



HERTS. HATFIELD HOUSE. c. 1607-11. N. elevation. The ultimate development of the type of elevation of which Moyns Park was a simple form. The brickwork varies in colour, dark to bright reds. The pierced parapet and balustrade to terrace are of purpose-moulded brick, although on the S. elevation some of the parapet has been replaced by stone. (Detail, p. 330.)



HERTS. HATFIELD HOUSE. b. 1607-11. S. elevation to Park. The centre is stone, wings brick with stone dressings.
The gateway screens to park are modern.



HERTS. HATFIELD HOUSE. b. 1607-11. E. elevation from Maze shewing patterns of the pierced dwarf walls of various periods.



KENT. COBHAM HALL. The wings, built d. 1584. The centre portion by Inigo Jones, begun 1620, was delayed by the Parliamentary War, and not completed until ten years after his death. It was afterwards modified by Wyatt.



SURREY. KEW PALACE. d. 1631. S. elevation. Built by Samuel Fortrey, who was of Dutch descent. For this reason, and on account of its architectural features, it was known for 150 years as the Dutch House. The term "Dutch" is widely used to describe pedimented gables of the type built here; examples of which may be found in E., S. and S.W. counties. The sash windows are later insertions. In this building we have very early gauged work, and early use of Flemish bond. (See details, pp. 175, 299.)



Kew PALACE. d. 1631. Garden or N. elevation. The treatment of this elevation is more simple than that of the entrance front, but retains many of the same features. The coupling of third floor windows of wings by wide triangular pediments of flat pitch is interesting.



Kew Palace. d. 1631. Centre of S. front. This building is one of the earliest examples of gauged brickwork in England, although of a rough character. The Doric pilasters on either side of the door were cut away some years ago when an ugly wood and glass covered way was erected; since removed. The Ionic caps are built up of brick, gauged with "invisible joints" and carved. The Corinthian columns are built up of brick on end cut to correct section and having entasis. The capitals of these columns are also built up of brick and carved. The rustications, mouldings, &c., are of cut brick. The arches of semi-circular window heads are of cut brick and their keys of gauged brick carved. The cornices are weathered with plain tiles as at Pocock's School, Rye, and at Barnham Court.



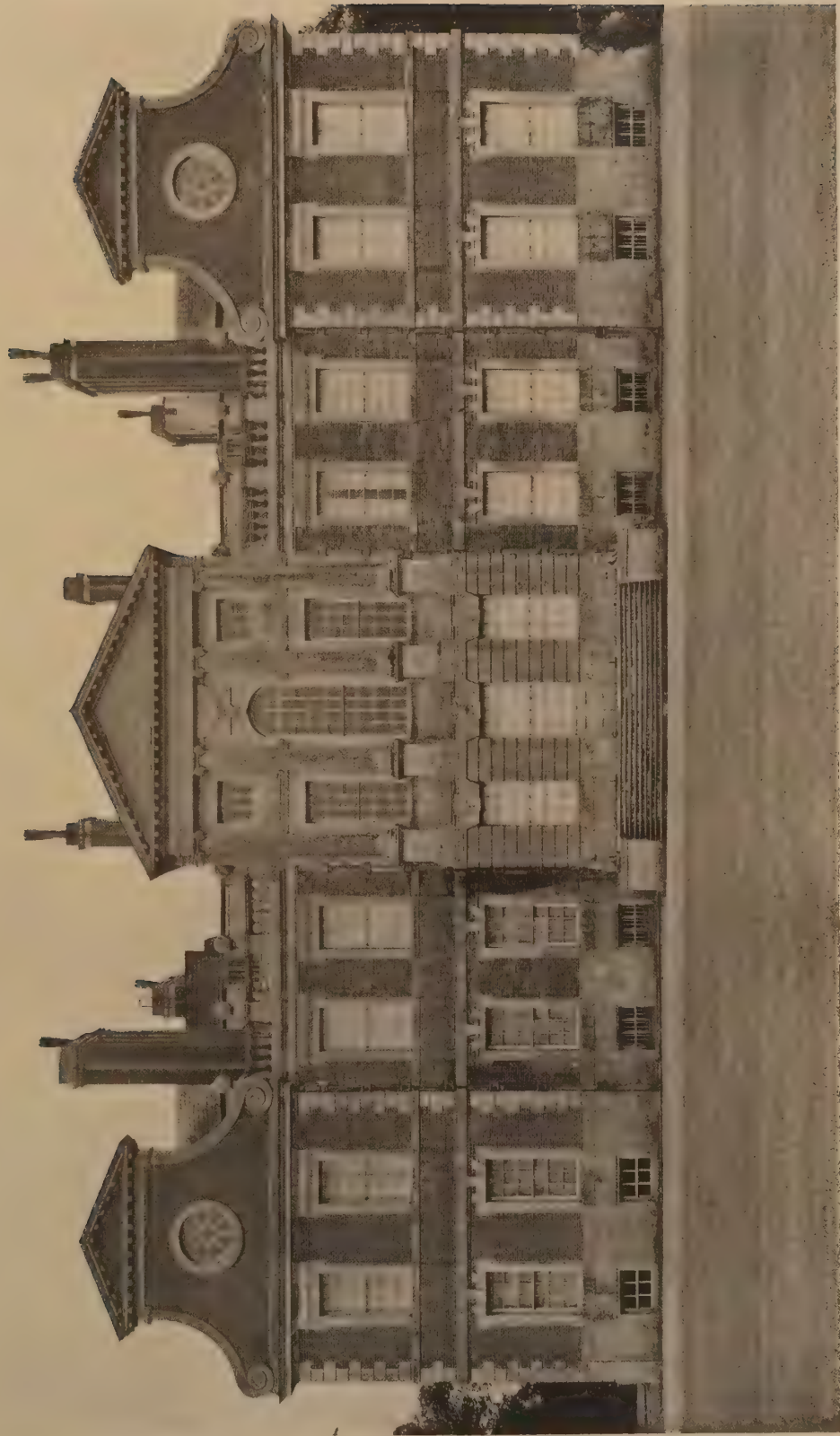
KENT. BROOME PARK. c. 1635. Entrance or E. elevation. The porch is modern, in other respects this elevation is very much as when built. It will be seen that the gables and cornice of S. elevation have withstood the strain imposed upon them by settlement of foundations. English bond.



KENT. BROOME PARK. N.E. angle. The E. porch and N. doorway are modern, otherwise there is little alteration. No better example exists of variety and richness of gable-pediments.



KENT. BROOME PARK. c. 1635. The centre bay, cornices and pediments above the centre bay, together with some windows and garden details, are modern alterations made by the late Lord Kitchener.



NORFOLK. RAYNHAM HALL. c. 1635. By Inigo Jones. The brick and stone wings compare not unfavourably with the all stone centre portion. English and Flemish bonds are used in adjoining panels, probably experimentally, as up to this time English bond was that in general use.



HERTS. HARPENDEN. ROTHAMSTED. c. 1635. Three gables of elaborate "Dutch" type, and a variety of cut brick chimneys—all restored.



SUSSEX. RYE. POCKOCK'S SCHOOL. Before c. 1638. A vigorous piece of cut brickwork in the Tuscan order. The gauged elliptic window is modern. Few moulded members have been employed, but great judgment has been shewn in using tiles of various thicknesses and by careful study of projecting courses. This is an early example of gauged brickwork in arches, &c. English bond is used.



KENT. OLD CHARLTON. GARDEN PAVILION. Mid 17th century. The entrance front bulged some years ago, and had to be re-built, and the old bricks supplemented by Luton purples, &c. Accordingly, although the detail was preserved, the bricks are not all original. The doorway was originally in the end elevation centre. An excellent instance of that able handling of brick in the simple, unaffected manner which was characteristic of Inigo Jones, to whom the building is attributed.



HERTFORD. BALLS PARK. c. 1640. A feature of this house is the window architraves. Colour, orange-red. Dressings, a slightly thicker brick roughly gauged or "edged and rubbed." Colour, yellow-red. Rough texture. English bond.



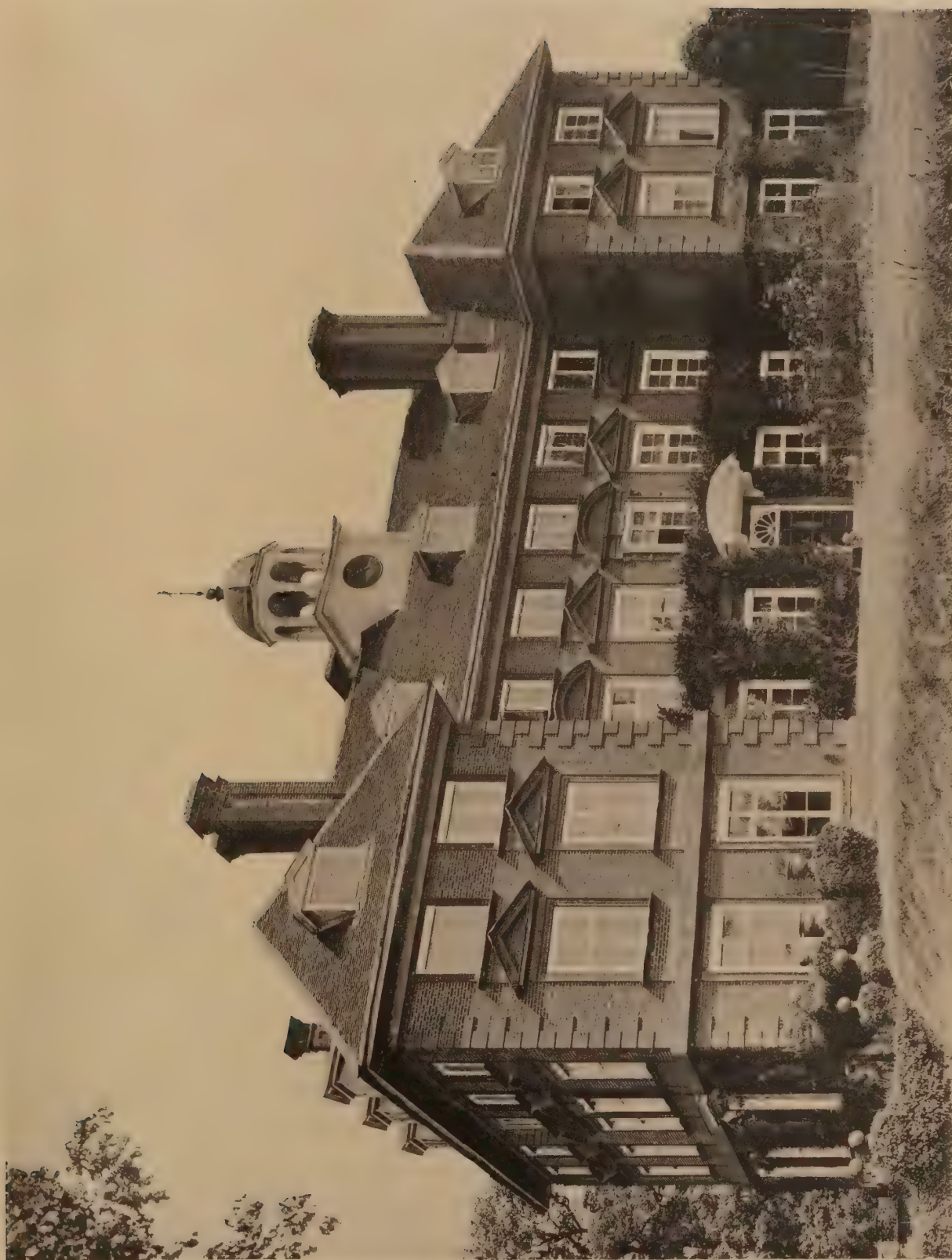
SUSSEX. BARNHAM COURT. c. 1645. Angle view shewing projections. A typical country builder's production in hard bricks; part cut, part purpose-moulded and gauged. English bond.



HIGHGATE. CROMWELL HOUSE. c. 1650. The cut brick volutes to centre window should be compared with those at Tyttenhanger Park, p. 302. The quality and variety of the brickwork is exceptionally good as also is its design. Measured detail drawings are given on pp. 399-401. Both English and Flemish bonds are used.



HIGHGATE. CROMWELL HOUSE. c. 1650. Angle view, looking upwards, shewing refined nature of mouldings to window architraves, cornice, &c. Measured drawings, including full-sized details of the brickwork of this fine house, are given elsewhere.



HERTS. ST. ALBANS. TYTTENHANGER PARK. 1654. S. front. Attributed to John Webb. The mouldings of pediments, &c., of cut brick. The dressings are of deeper red than usual, but have not been coloured during the last 60 years. Mostly Flemish bond: some English bond.



HERTS. ST. ALBANS. TYTTENHANGER PARK. 1654. W. and S. fronts.



ST. ALBANS. TYTTENHANGER PARK. 1654. Centre of S. front. The carved brickwork of centre window and similar work to a window in the W. front should be compared with the centre window of Cromwell House, Highgate, p. 302.



NORFOLK. SCOLE. WHITE HART INN. d. 1655. Gable end and one of five pediments of front. English bond; the Flemish bond of panels is later.



SURREY. GODALMING. HOUSE IN HIGH STREET. d. 1663. A striking example of admirable effects produced by simple projections, where few moulded members are employed. Such projection of strapwork in panels and above cornice is often not more than $\frac{3}{4}$ in.



SURREY. GODALMING. HOUSE IN HIGH STREET. c. 1660. Another interesting example of cut and moulded brickwork, which adjoins the preceding illustration. The diversity of these shews the versatility of the builders and adaptability of their material.



HERTS. WHEATHAMPSTED. MACKERYE END. d. 1665. The chimneys resemble those at Rothampsted, the window architraves those of the N. front at Tyttenhanger.



KENT. BROMLEY COLLEGE. d. 1666. Strongly marked vertical divisions by means of brick buttresses



MIDDLE TEMPLE GATEWAY. d. 1684. By Sir Christopher Wren. The use of small bricks gauged and set with a very fine joint confers a certain scale upon the stone pilasters. See Professor C. H. Reilly's remarks on p. 61.



Photo by Arthur Western

LONDON, E.C. CHRIST'S HOSPITAL. 1672. Sir Christopher Wren. A notable example of his masterly handling of brick. The Ionic order is in gauged red brick, the capitals of the pilasters being built up of brick and carved. The cornice is of wood. This wing is now demolished and re-erected at Horsham.



KENT. GROOMBRIDGE PLACE. Before 1674. Attributed to Sir Christopher Wren. This building is a model of what may be achieved with brick of good colour, without embellishments. This house is known, wherever architecture is known, for its simplicity and repose.



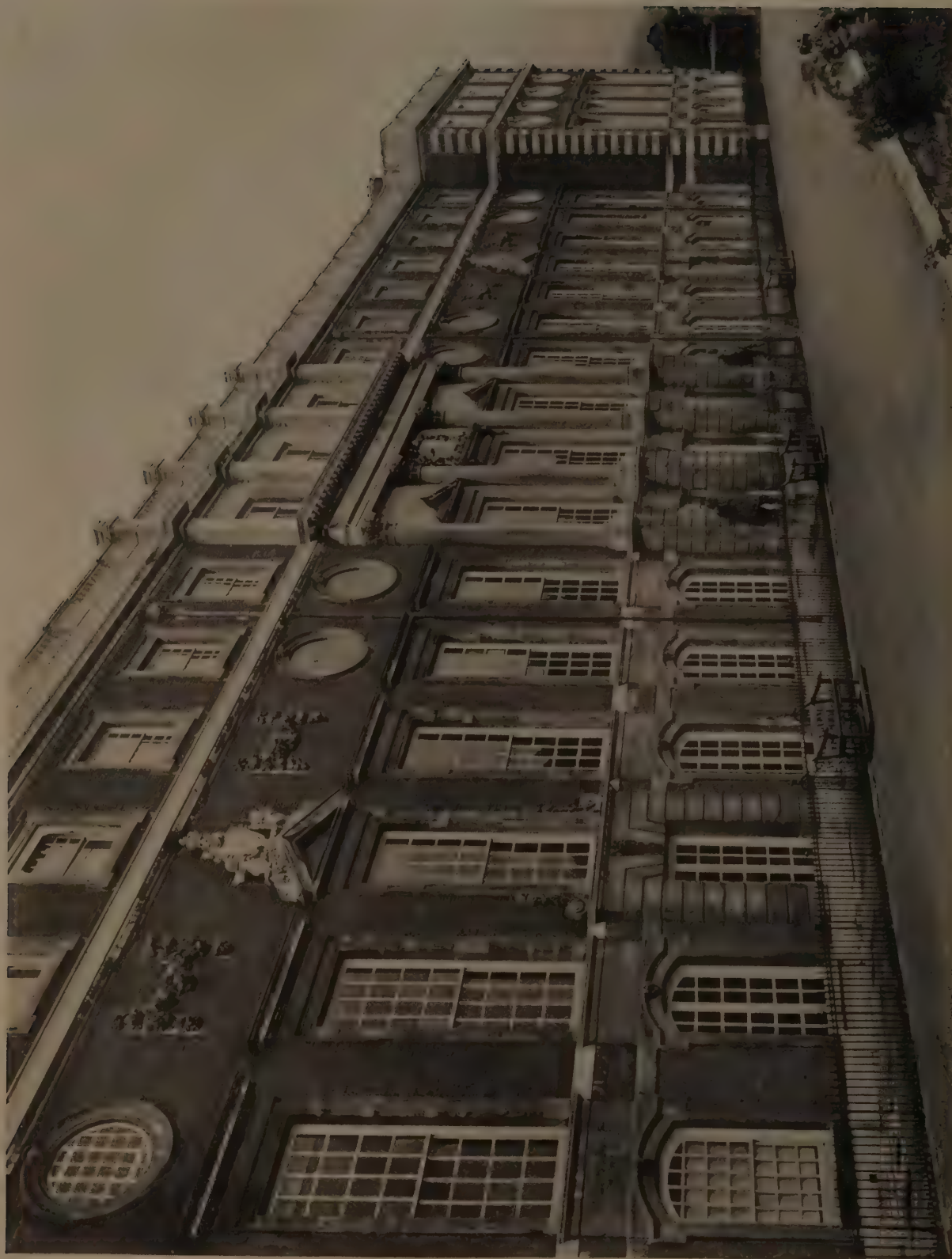
WILTS. RAMSBURY MANOR. The stables, c. 1680. The rusticated brick piers are a simple expedient producing good effect.



WINCHESTER. SCHOOL. Attributed to Sir Christopher Wren. 1684. Although the use of brick is confined to the walling, it produces an effect by its texture and the richness of its colouring which cannot be expressed, and is difficult to realise without seeing the building itself. It is a fine example of association of rough bricks and thick joints with ashlar and carved stone. Bricks, $8\frac{1}{2} \times 4\frac{1}{4} \times 2\frac{3}{8}$ ins.; four courses rise $11\frac{1}{2}$ ins.



WESTMINSTER. BLUECOAT SCHOOL. Attributed to Sir Christopher Wren. 1688. A compact and dignified piece of brickwork.



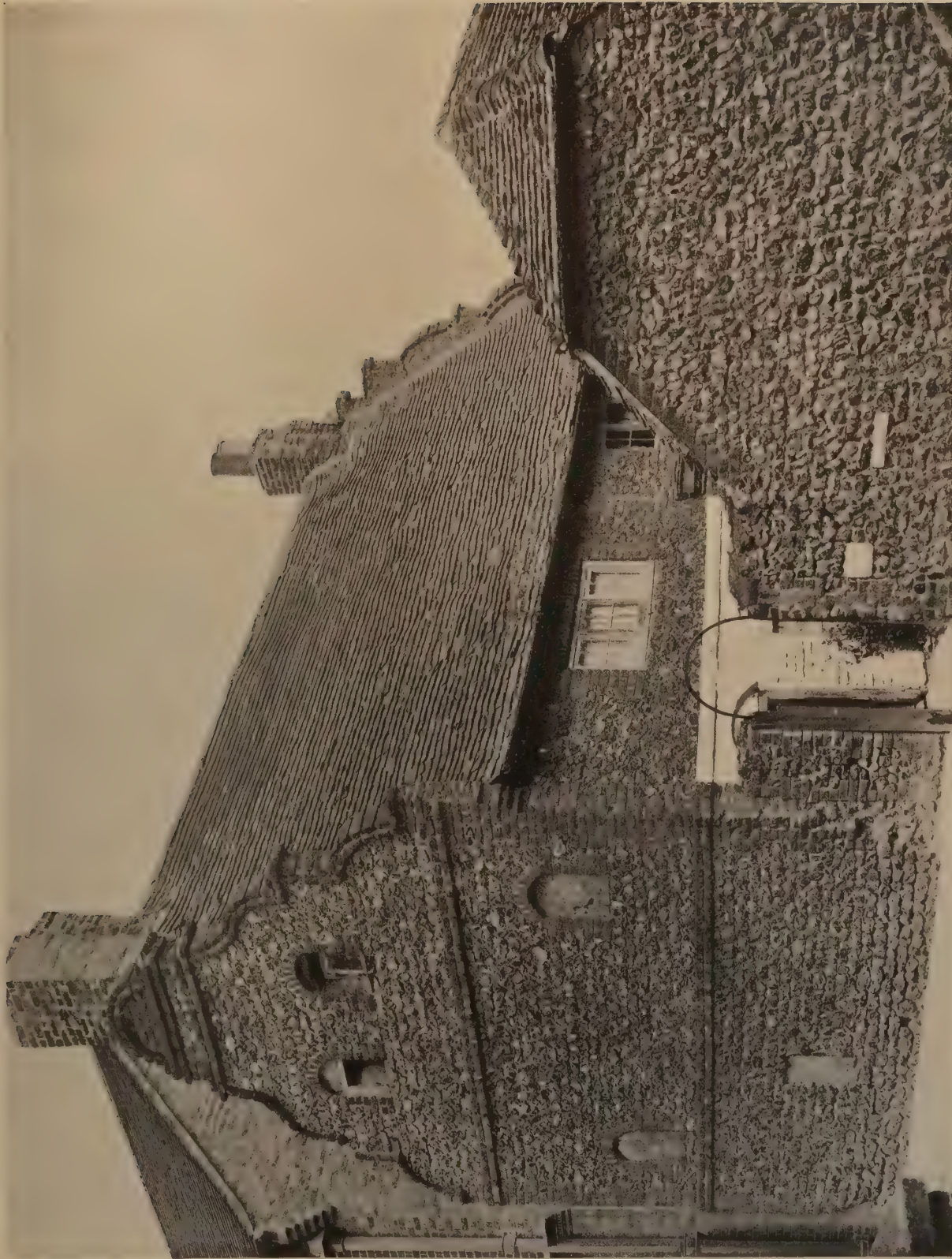
HAMPTON COURT PALACE. S. front. Sir Christopher Wren. c. 1690. Wallings, bright red bricks, $8\frac{1}{2} \times 4 \times 2\frac{1}{2}$ ins.; four courses rise $10\frac{3}{4}$ ins. (ground floor). Gauged piers, $8 \times 3\frac{1}{4} \times 2\frac{3}{8}$ ins.; four courses rise $10\frac{3}{4}$ ins. Dressings, Portland stone, much of which weathers white and forms a striking contrast with the red wallings. Compare these fine bricks with their thin joints and gauged piers with School, Winchester, p. 198, where stonework is similarly carved.



HAMPTON COURT PALACE. The Fountain Court. Sir Christopher Wren. c. 1690. The combination of Portland stone with bright red brick produces a gaiety and brilliance of effect not otherwise attainable.



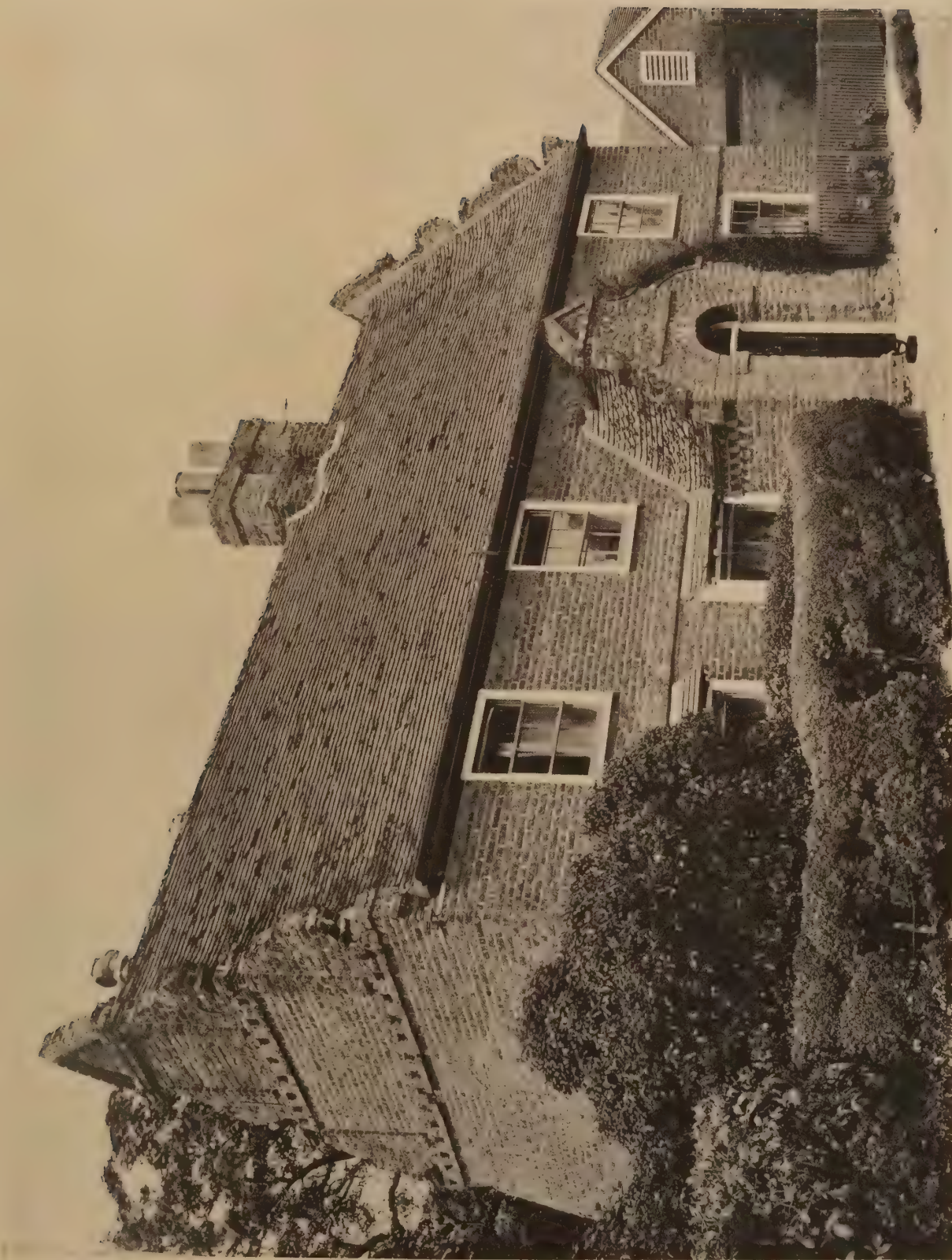
Photograph by courtesy of I. C. Goodison, Esquire
KENSINGTON GARDENS. "THE GREENHOUSE." c. 1690. By Sir Christopher Wren. This is particularly interesting in connection with the extract from Isaac Ware's "Complete Body of Architecture," pp. 57-8.



THANET. READING STREET. VOWEL'S COTTAGE. c. 1690. A typical Thanet cottage of flint wallings, with red brick dressings. The gable end is corbelled out at eaves level, and rises steeply (with the pitch of roof) in quadrants, rectangles or ogee curves to the pediment (semi-circular, triangular or serpentine), with which it terminates. Sometimes this is surmounted by the chimney. The original windows varied much, and it is not unusual to find windows having semi-circular, semi-elliptical and segmental heads in the same elevation. The quoins are emphasised by blocks of three (courses), alternately 9 and 14 ins., and the door and window openings are often similarly treated. Horizontal lines are obtained by double and treble courses of unmoulded bricks at first and second floor levels. In the above illustration the gables at each end differ in outline. Neither in the quadrants nor in the ogees are the curves completed. None of the bricks are moulded except one in the corbel course.



KENT. SARRE. FARMHOUSE. c. 1690. The chimney and gable are incorporated, and the gable, being built wholly in brick, has been skilfully handled to produce variety of surface. Rudimentary pilasters support a slight corbel-table and a projecting rib of plain headers connects the gable and chimney. Almost all the bricks used are unmoulded.



KENT. GULTON. COTTAGE. d. 1691. The gable pediments are unusual in their broken outlines. The setting back of headers (and their joints) in a Flemish bond course produces a simple but effective result. The bonding of this gable is very irregular. The modern sash windows ineffectually replace the originals, which would have mullions.



BLACKHEATH. MORDEN COLLEGE. Sir Christopher Wren. 1695. Brick and white paint. The quoins, band at 1st floor level and doorway columns, are of brick, plastered and painted white. The cornice is of wood, painted white. Probably a less costly material than Portland stone had to be used, but the contrast of white with red bricks was desired.



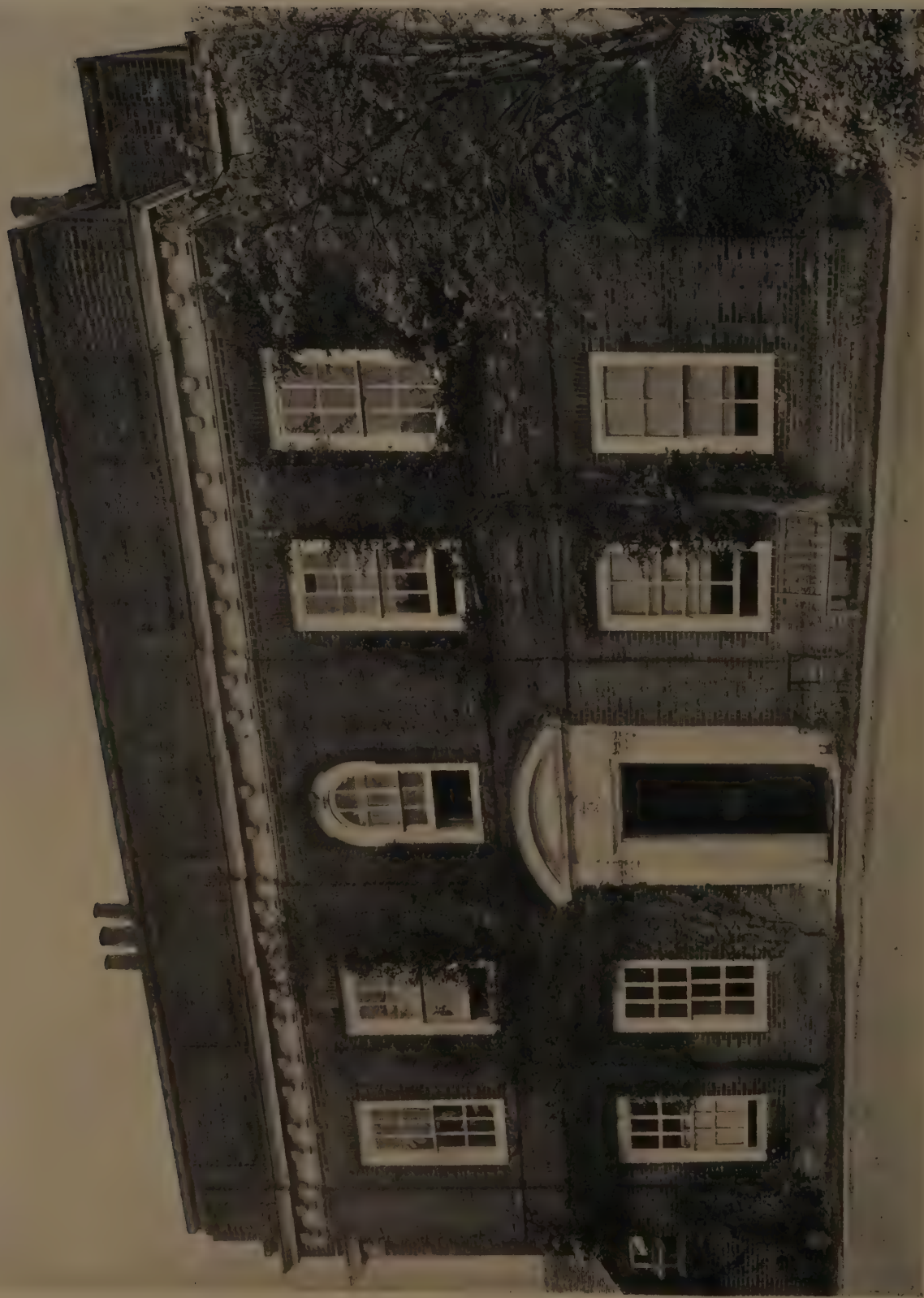
WINCHESTER. HOUSE IN HYDE STREET. Late 17th century. Another variety of ogival gable, popularly called "Dutch."



KENT. BETHERSDEN. SPARROWHATCH. Late 17th century. The brick copings are of several moulded members. The relieving arches have been made important features by being built as semi-ellipses, flush with wall, but over slightly recessed tympana; the imposts and keys project slightly. The whitening of arched and moulded windows is unfortunate.



BUCKS. CHICHELEY HALL. c. 1701. This remarkable house (the architect of which Sir E. L. Lutyens suggests may have been a Dutchman) has the rich details, both within and without, carried out so carefully as to negative any suggestion that brick was used for the wallings because more economical than stone. It certainly was not used for cheapness, but rather that by its colour it might display the whiteness of the stone dressings, and by the smallness of its units give scale to the stone orders and texture to the wall surfaces.



SURREY. FARNHAM. THE GRANGE. d. 1702. The simple, slightly projecting piers (treated as pilasters), the horizontal band at first floor and the panelling of the parapet, give variety to what would otherwise be a somewhat flat elevation. All this is accomplished by projections and recesses without any mouldings. The treatment of the window arch over doorway is unusual. (See detail, p. 307.)



LONDON, S.W. QUEEN ANNE'S GATE. c. 1705. The wallings of grey stocks and dressings of bright red bricks have become sombre by action of London atmosphere, and benefit greatly by the periodical painting in white of the window arch keys and horizontal bands. If all the doorways were painted white with similar green doors (as No. 17) this effect would be greatly enhanced. The slightly recessed blind windows between each house afford pleasing variety.



SUFFOLK. BURY ST. EDMUNDS. UNITARIAN CHAPEL. d. 1711. It would be difficult to find a Nonconformist chapel of this or any date which could vie with this building built for worship. The designing and execution of details are all excellent, and, architecturally, it is the finest building in the town. The stone balls (each on a foot), which once stood on the parapet angles, have been removed. The acanthus-leaf keys to elliptic window are carved out of brick.



CHICHESTER. PALLANT HOUSE. c. 1713. This house is commonly ascribed to Sir Christopher Wren, and although there is no record to connect it with him it is not unworthy of his genius. The cut brickwork of the cornice, window arches, &c., is very good. The treatment of quoins of the centre portion differs from that of those at the angles of the building, which are chamfered. Ground floor dull-red bricks; bright red dressings. First floor all bright red bricks. Gauged window arches and gate piers red rubbers. Dwarf wall, purply-red bricks. Quoins are gauged and bond with walling every fourth course.



KENT. LARKFIELD. BRADBOURNE. 1714. W. front. The tall ground floor windows impart a certain dignity to the façade. The coupled pilasters at the angles are unusual and effective. Wallings, $8\frac{3}{8} \times 4\frac{1}{8} \times 2\frac{3}{8}$ ins.; four courses rise 11 ins. Dressings, $8 \times 3\frac{7}{8} \times 2\frac{1}{8}$ ins.; four courses rise $9\frac{1}{4}$ ins. Colour, wallings—pinkish stocks, some yellow; dressings—bright red.



KENT. LARKFIELD. BRADBOURNE. 1714. Angle view of W. front, shewing window-arch-
keys, projections, &c.



KENT. LARKFIELD. BRADBOURNE. 1714. S. front. Bay, d. 1773.



KENT. LARKFIELD. BRADBOURNE. E. wing of S. front. 1714. The walling bricks are stocks of varying colours, mostly pinkish, but many mauve, green, yellow, buff, &c. The dressings are bright red bricks gauged. The pilasters are built of buff stocks, with bright red bricks at angles; all gauged and only one course in six bonds with the wallings.



SUSSEX. RYE. Building on domed crown of old water cistern, c. 1715. Built elliptic plan in heading bond.



LONDON. 179 CLAPTON ROAD. c. 1715. The colour effect produced by the rich red gauged dressings, contrasting with the duller walling bricks, the white painted woodwork, green door and railings, and white stone steps, is one of the most satisfactory results of this period.



SURREY. CROYDON. FRIENDS' HOUSE. c. 1715. An all-brick building with contemporary gate piers and gate.



SURREY. FARNHAM. THE CONVENT, LONGBRIDGE. d. 1717. The walling is built with $2\frac{1}{4}$ ins. bricks, rubbed and edged, with $\frac{1}{4}$ in. joints. The dressings are built with $2\frac{1}{8}$ in. bricks and invisible joints. This house is a fine example of cut, rubbed, and gauged brickwork, the beautiful effect of which is almost destroyed by removal of the glazing bars and substitution of large sheets of plate glass which destroy the scale smaller panes confer.



HERTS, WELWYN, LOCKLEYS. Built 1717. Wallings plum-pink. Dressings bright orange-red, recently coloured. The attic is exceptionally heavy.



SURREY. FARNHAM. WILLMER HOUSE. d. 1718. Perhaps the most remarkable elevation in cut and moulded brickwork extant. The whole front is gauged. The bolection mouldings of window architraves are exceptional. The cornice is also excellent. Measured drawings and details are given on pp. 403-7. Rich red bricks.



SURREY. FARNHAM. WILLMER HOUSE. d. 1718. Angle view, shewing projections.



BERKS. ABINGDON. BRICK ALLEY ALMSHOUSES. d. 1718. The brickwork (plain and gauged) has weathered better than the stone. Vitrified (bluish) headers have been used with red stretchers, built Flemish bond to produce the chequered effect of walling which shews off to advantage the more highly finished red gauged dressings.



HERTFORD. 28 ST. ANDREW'S STREET. c. 1720. The Ionic order was less frequently employed than the Doric in brickwork, and comparatively few examples exist. Of these, this building is probably the most interesting, although it cannot vie with the wide elevation of Christ's Hospital, now demolished, but one wing of which is illustrated on p. 196. The use of the same order in three sizes on the same elevation is unsatisfactory, the smallest appearing as the baby, but the gauged and carved work (the capitals are built up of brick and carved) are good. The pilasters are without entasis and somewhat lanky.



LONDON, E.C. 11 TOOKS COURT. c. 1720. Brick pilasters and capitals built up of brick and carved. Cornice of brick lumps carved. See measured drawings, pp. 408-11.



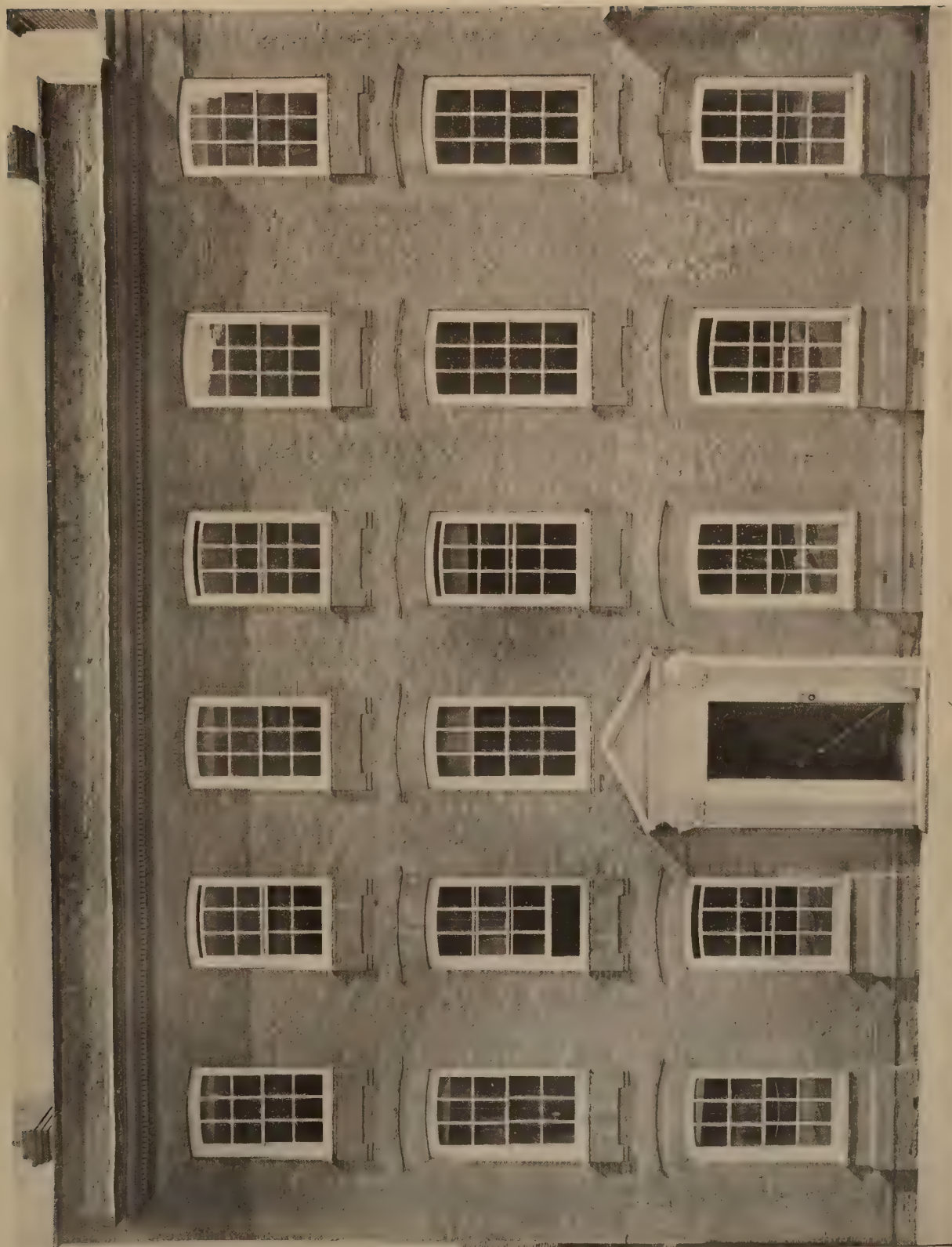
BERKS. WALLINGFORD. CALLEVA HOUSE. c. 1720. The brownish-red walling bricks include a large percentage of vitrified grey headers which photograph a light colour. The dressings are in bricks of a rich red. The window arches are treated differently at each floor, as are the strings at first and second floors, so that the second floor string may not break the pilaster shafts.



KENT. GOUDHURST. FINCHCOCKS. c. 1725. Brick and white-painted wood.



KENT. GOUDHURST. FINCHCOCKS. c. 1725. Garden, front. Vitrified purple headers in Flemish bond produce chequered effect. The fourth chimney, built of wood, painted to simulate brick for symmetry, was pulled down 50 years ago.



CAMBRIDGE. FITZWILLIAM HALL. d. 1727. A street house of unbroken front. The roughness of the walling bricks imparts good texture. The guttae of apron pieces are carved out of brick.



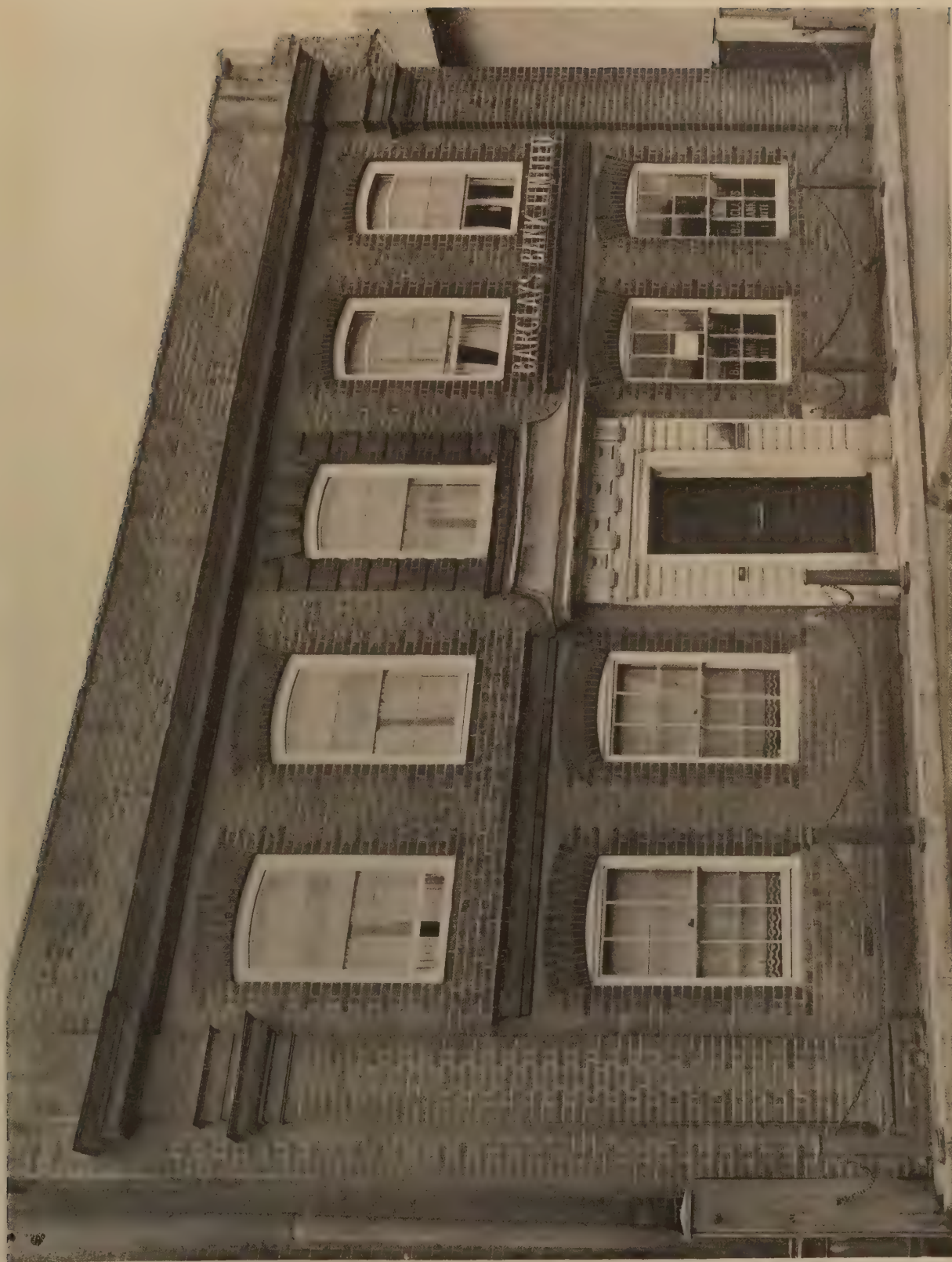
KENT. SEVENOAKS. THE OLD HOUSE. c. 1728. Silvery grey headers impart an irregular but pleasing variety to the red brick walls.



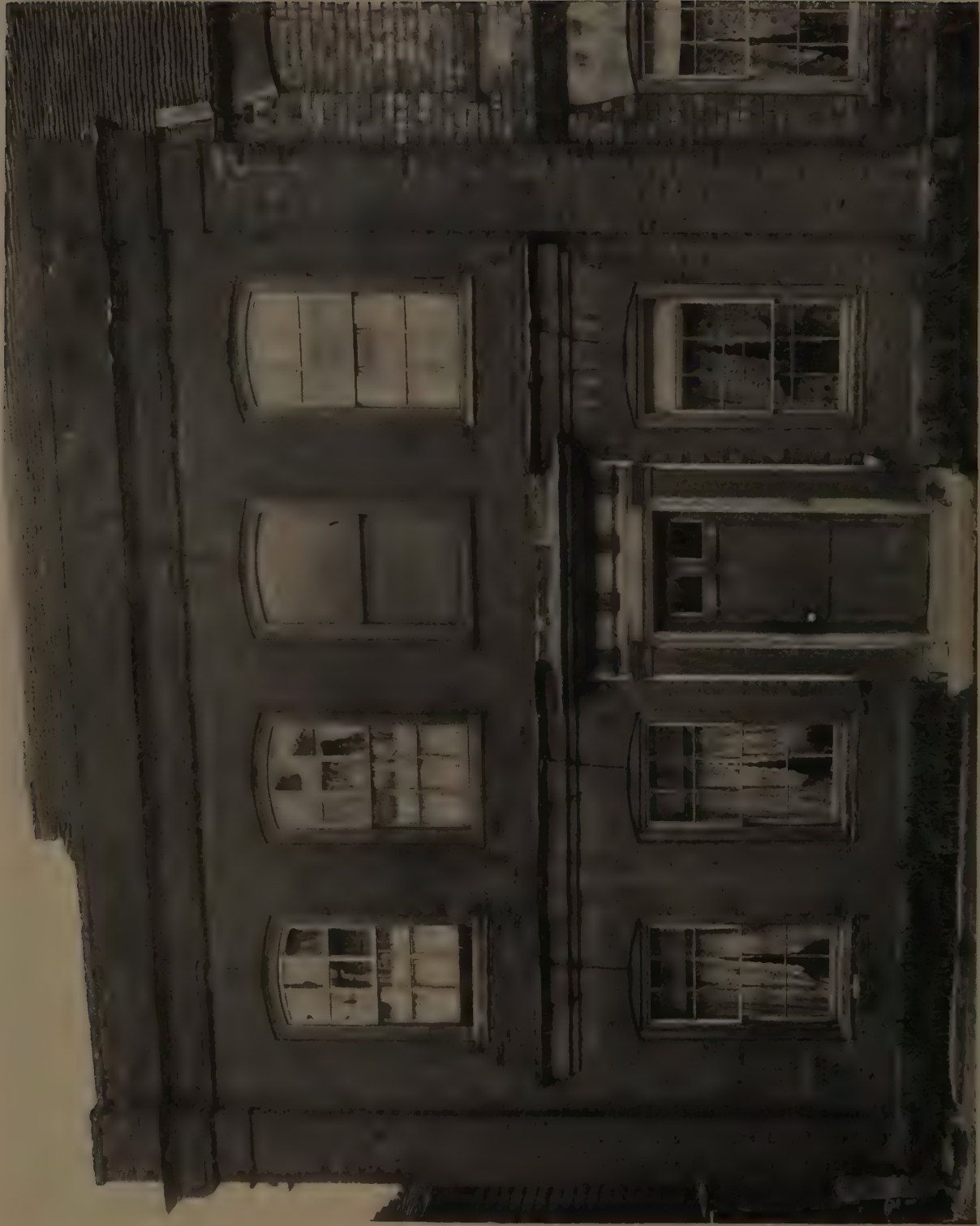
ESSEX. RAINHAM HALL. Built 1729. Entrance front. A finished piece of work where the red gauged brick contrasts with the grey-yellow walling stocks, and these again with the Portland Stone quoins, base and keys and the painted cornice and doorway. This was the period of Palladian architecture, when everything was sacrificed to building in the Italian manner, a style to which, fortunately, brick was not well suited except when plastered over. Rainham remains essentially English in its classicism.



ESSEX. RAINHAM HALL. Built 1729. Garden Front. The only deviation from absolute symmetry is the staircase window; placed upon the centre line of the staircase and without regard to the exterior.



SAWBRIDGEWORTH. HOUSE IN KNIGHT STREET. c. 1730. An effective brick house.



HERTS. SAWBRIDGEWORTH. No. 40 KNIGHT STREET. c. 1730 The window arch keys are carried up to cornice, which breaks round them. The ground floor arches are built in bricks differing slightly in colour, so producing effect of rays in the voussoirs. The key of window over door is slightly wider than those of other windows.



ESSEX. DEDHAM. HOUSE OPPOSITE CHURCH. c. 1732. Another very gay colouring. Soft coloured wallings. Rich, red gauged dressings, white woodwork and steps, green door and railings.



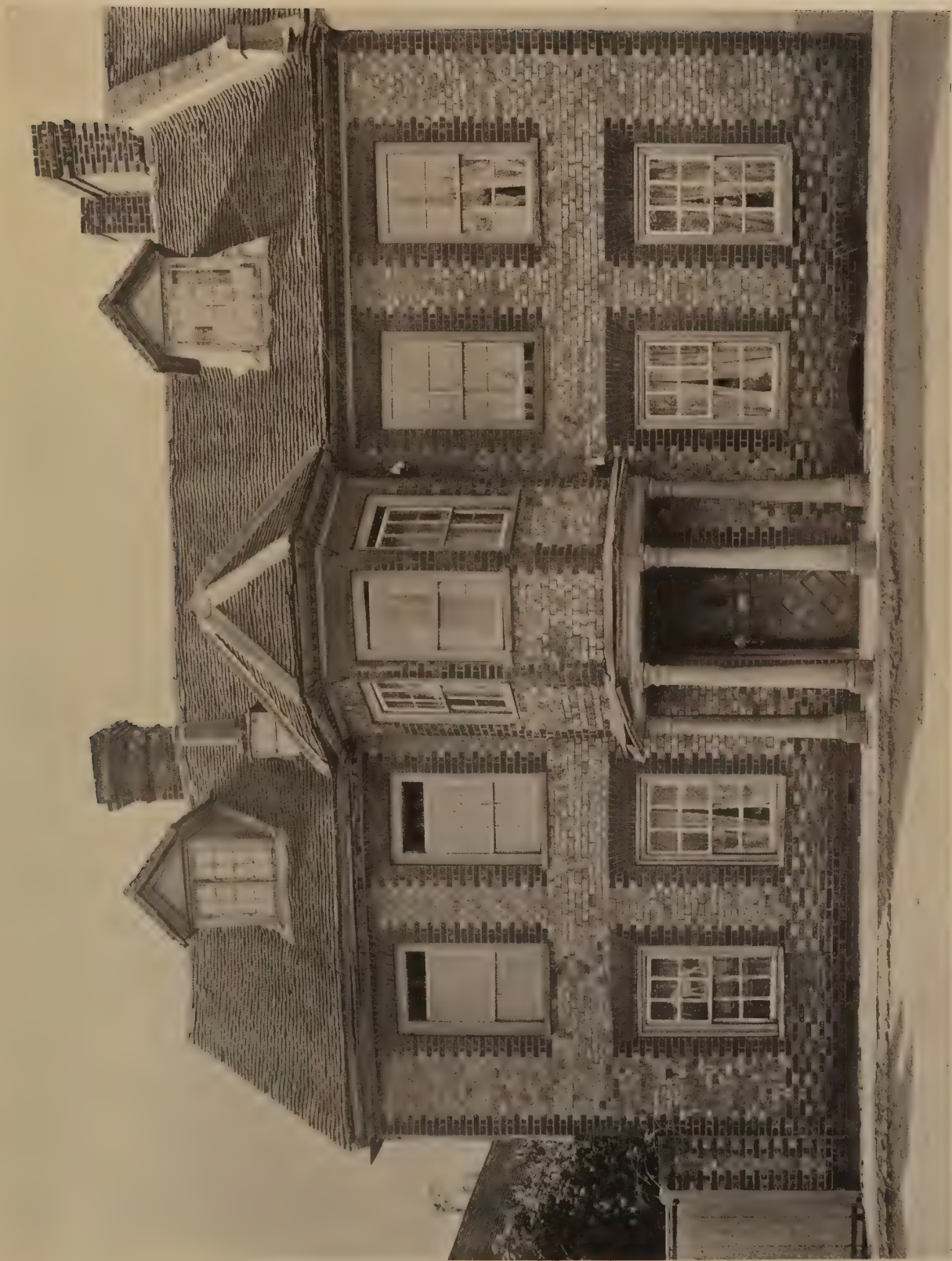
BERKS. ABINGDON. TOMPKIN'S ALMSHOUSES. d. 1733. Grey headers have been freely used in the wallings. The gauged dressings are all of red brick. The panel and pediment treatment over the archway at the end of the alley with the short lengths of parapet over the centre doorways and the skilful use of rough and gauged brick in different colourings confer great distinction upon these humble dwellings.



NORFOLK. ORMSBY ST. MARGARET. THE OLD HALL. c. 1735. The wallings are in heading bond throughout, which Batty Langley considered "most beautiful."



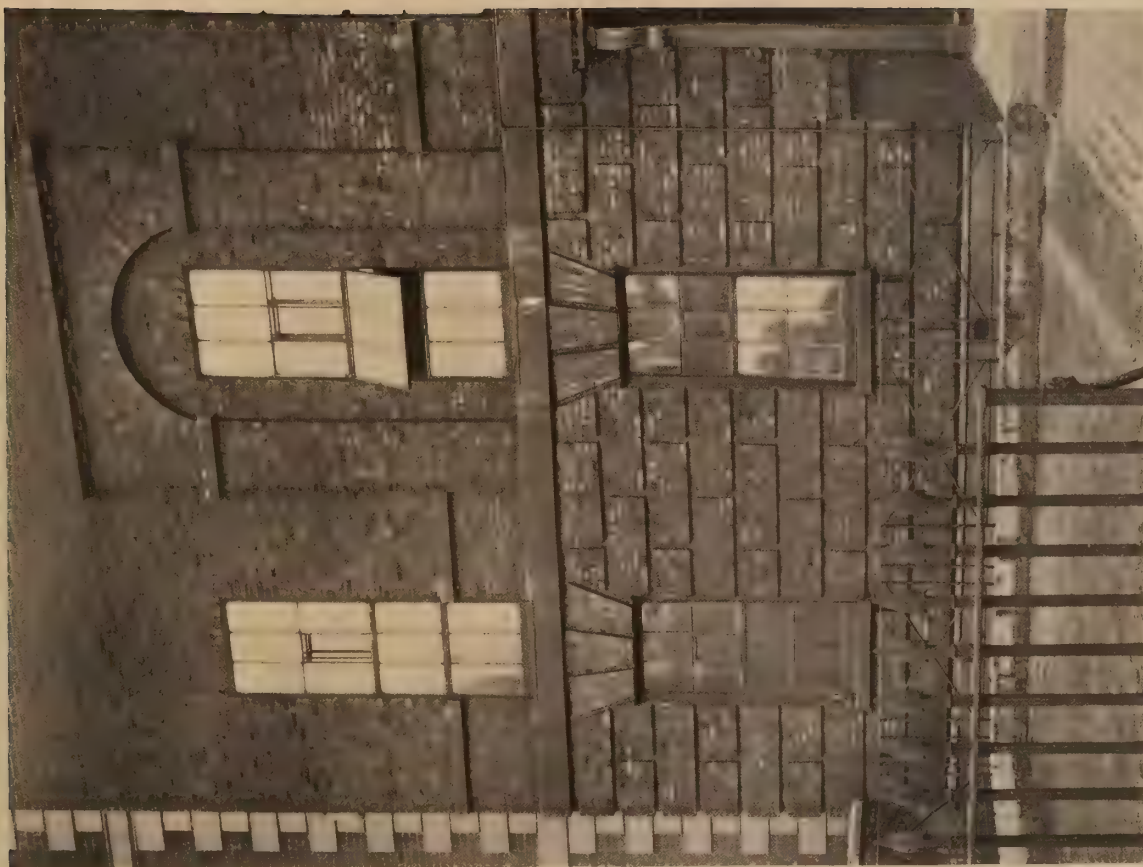
SUSSEX. BECKLEY. CHURCH HOUSE. d. 1744. A typical country builder's brick house.
Yellowish-pink walling bricks, mottled grey with bright red dressings.



HANTS. WICKHAM. HOUSE IN SQUARE. c. 1750. Wallings, grey headers. Dressings rich red bricks. Below the ground floor windows, red stretchers and grey headers built in Flemish bond produce a chequered effect.



DORSET. BLANDFORD. EASTWAY HOUSE. c. 1750. Brick of two colours. Stone coping to parapet. Brick keys to window arches. By carrying up the centre of parapet as a pediment an exceptionally large dormer window is provided.



45 LINCOLN'S INN FIELDS. b. 1752. Grey stock bricks. Distinction is secured for the centre windows by the arch and pilasters formed by simple unmoulded projections from the wall face. The rustication of wall and window arches of ground floor exhibit the same thoughtful use of homely material.



DORSET. HOUSE AT BLANDFORD. Mid 18th century. Walling in brown and grey headers (many vitrified) with red dressings which are used to connect ground and first floor openings.



KENT. TONBRIDGE. FEROX HALL. c. 1755. The dullness of this elevation is relieved by the big pilasters and by the strings. The whole front is gauged.



SUSSEX. RYE. c. 1755. GARDEN ROOM AT LAMB HOUSE. Brickwork imitated by the use of brick tiles, with which the walls are faced above the cellar door. The quoins are wood. These tiles were little used after the brick tax was discontinued in the middle of the 19th century. Inset shews header and stretcher brick-tiles.



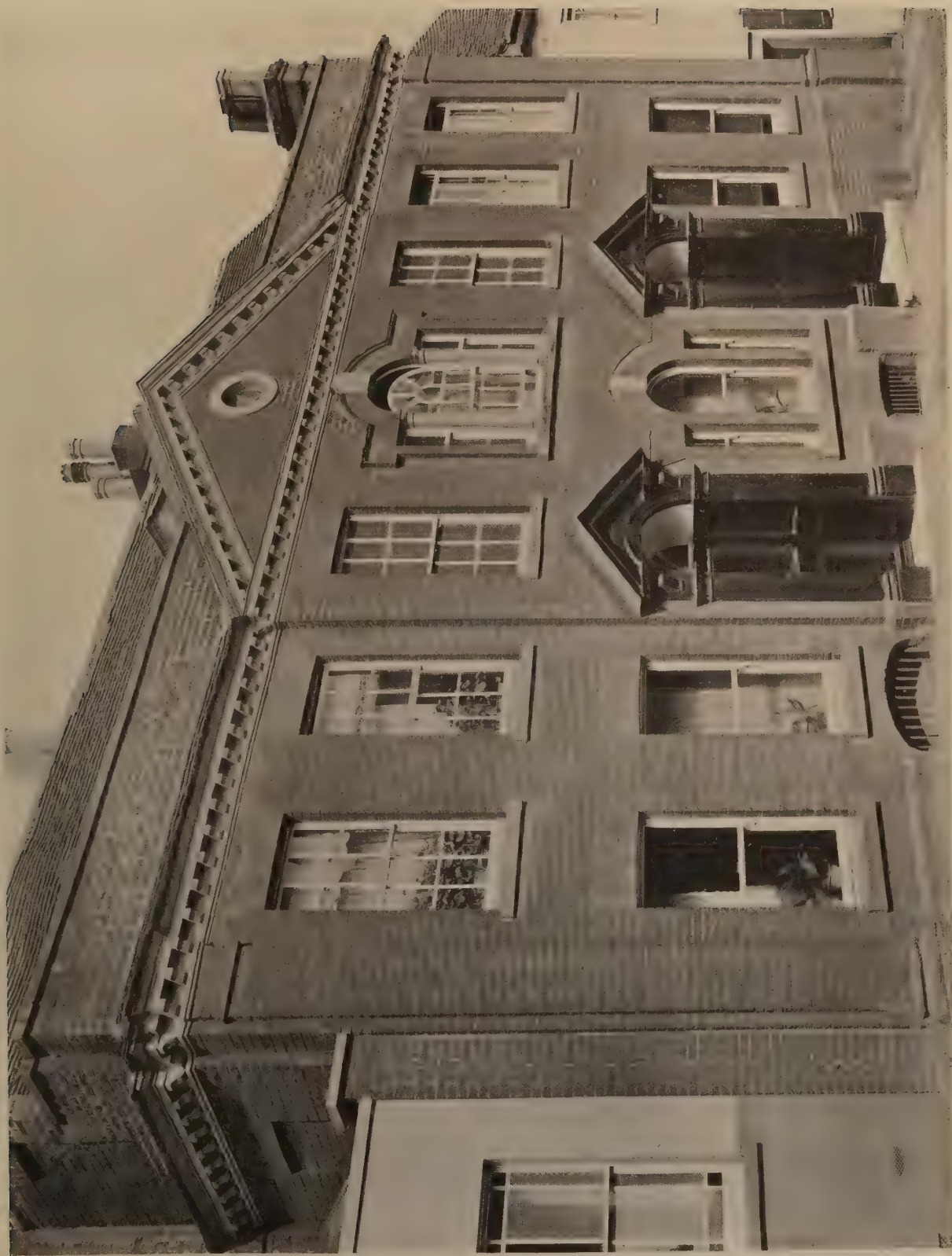
KENT. WINGHAM. DELBRIDGE HOUSE. c. 1760. The chief brick features are the moulded string course, the cut brick voussoirs of centre window, and the rusticated keys of 1st floor window arches. The wings are semi-circular.



BOODLES CLUB, ST. JAMES'S STREET. By R. and J. Adam, b. 1765. Yellow-grey stock bricks. The porches and dressings stucco painted. A characteristic example of the use of brick by the brothers Adam.



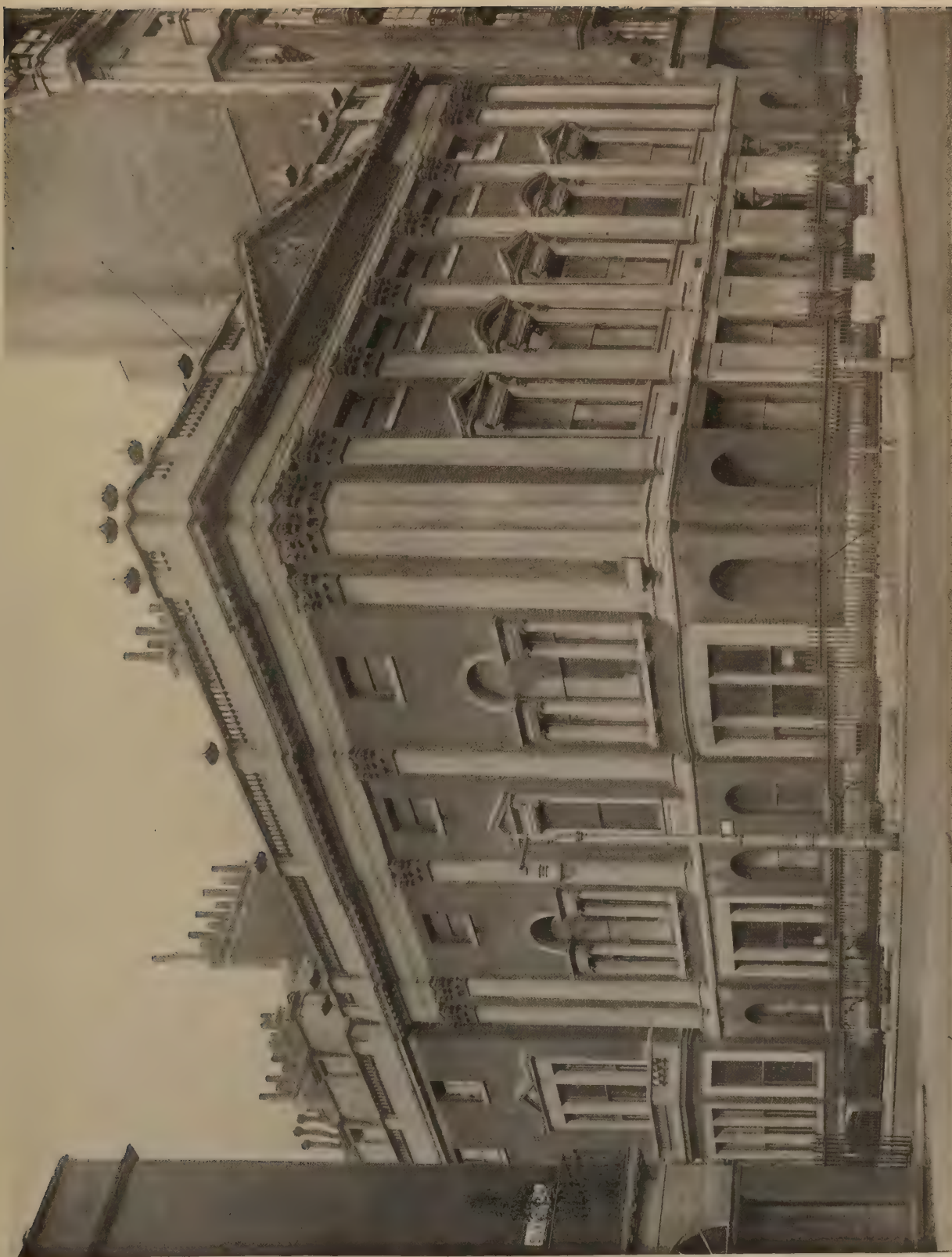
SURREY. FARNHAM. 39 WEST STREET. c. 1770. The treatment of the brick bands and centre windows of first and second floors is noteworthy. Such use of painted wood is well associated with red brick ; it would be ineffective with stone.



ESSEX. COLCHESTER. HOUSES IN WEST STOCKWELL STREET. c. 1770. With Venetian window, the arch, architrave, and painted columns of which are of cut brick. (See detail, pp. 306, 420.)



HERTS. KING'S LANGLEY. c. 1770. House with four Venetian windows. A flat elevation which suffers from lack of shadow-producing projections.



BROOKS'S CLUB. ST. JAMES'S STREET. By Henry Holland. b. 1777. A skilful association of grey stock bricks and ashlar.
At the angles, gauged brick niches take the place of the round-headed windows.



SURREY. FARNHAM. HOUSE IN CASTLE STREET. c. 1780. The semi-ellipses, under which the ground floor windows are set back, give character to what, without them, would be an uninteresting front.



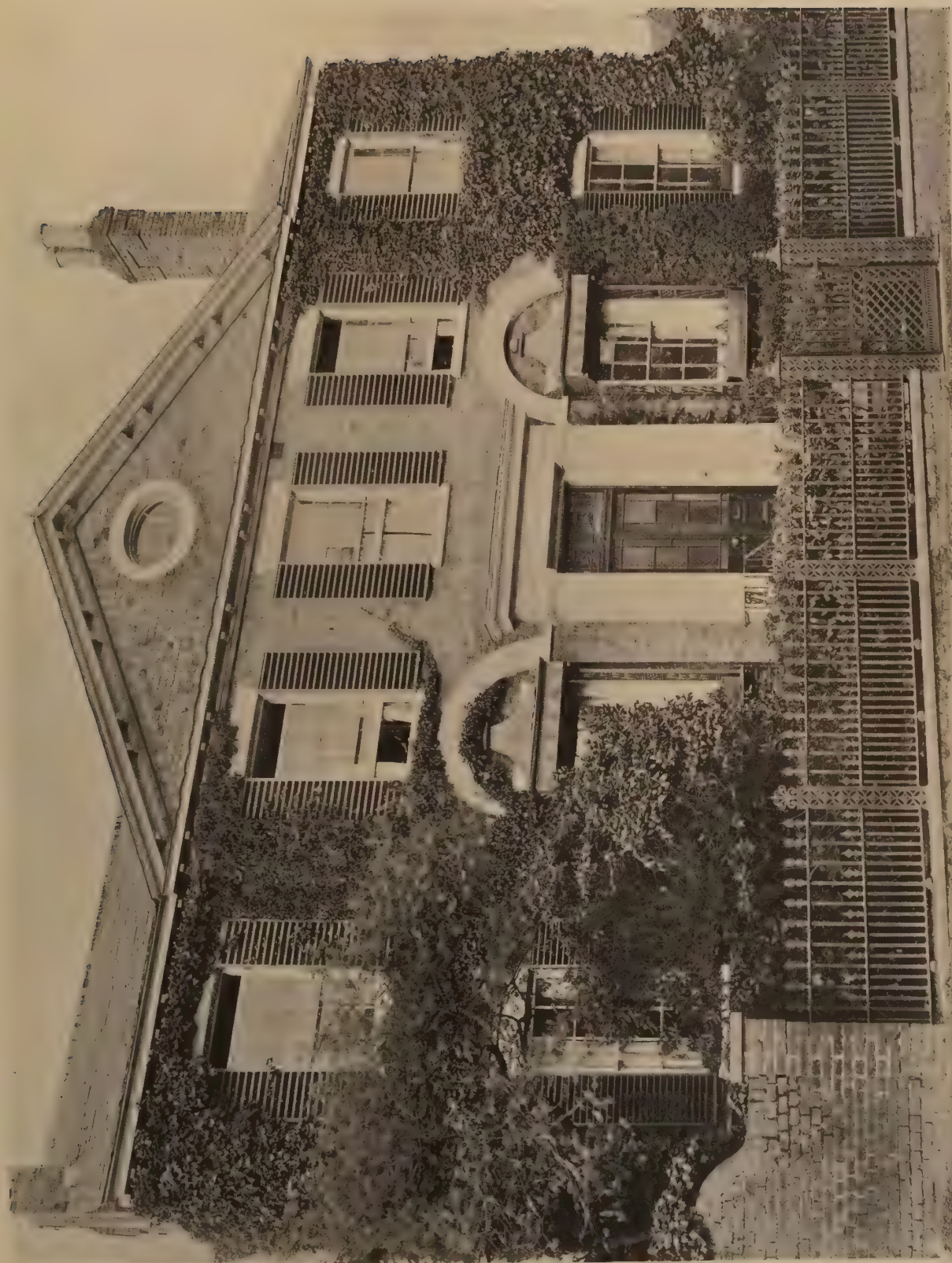
SUSSEX. ARUNDEL. HOUSE IN MALTRAVERS STREET. c. 1790. The wings are of red brick. The centre is of grey headers with red bricks at quoins. The division vertically into these almost equal portions is not satisfactory. The simple eaves course forming the cornice is frequently employed in the southern counties, and is adaptable to many variations.



SUSSEX. COTTAGE NEAR RINGMER. Late 18th and early 19th century type. The treatment of the house at Blandford, p. 242, is here further developed into patterns, rarely found in colours in England. The walling bricks are soft silver-grey, the dressings pale vermillion, but deep red dressings are often associated with the greys. Bright reds are always avoided, as indeed all strong contrasts should be.



DEVON. CULLOMPTON. c. 1795. House with bow windows.



HERTS. HOUSE AT KING'S LANGLEY. (Regency period.) Even the unpleasing appearance of yellow brick may be ameliorated by association with harmonious colouring. In this house the cornice, doorway and window arches are painted white, while the door, jalousies, window hoods, treillage and the iron railings are painted Royal blue, which accords well with the colour of the brickwork.



ESSEX. COLCHESTER. TRINITY CHURCH TOWER. Saxon doorway built with Roman bricks re-used. Bricks vary from $1\frac{1}{2}$ to $3\frac{1}{2}$ ins. Five courses rise $11\frac{1}{2}$ ins.



ESSEX. LITTLE COGGESHALL ABBEY. Sub-vault of Dorter Corridor, c. 1220. Brick ribbed vaulting and doorway. The orders of doorway are built of purpose-moulded bricks. An imperfection in the mould can be traced in several bricks.



ESSEX. SHENFIELD. CHURCH OF ST. MARY THE VIRGIN. Late 15th century. N. doorway surmounted by brick crenelated offsets.



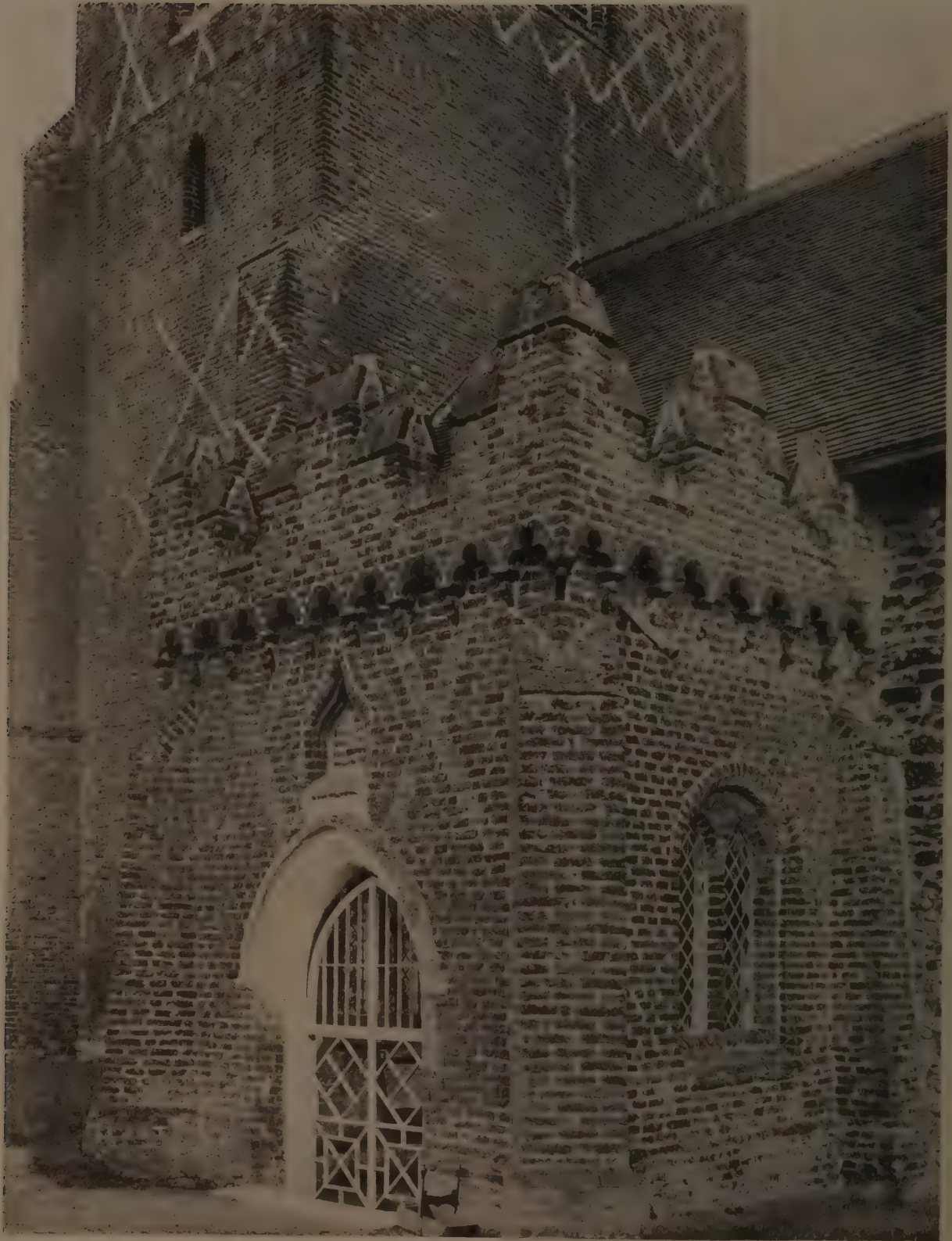
SUFFOLK. NAYLAND. GIFFORD'S HALL. Early 16th century. Gatehouse entry to courtyard shewing detail of brick panel and spandrels filled with tracery. Brick stops, label and tassels in carved brick, terminating moulding above them.



SUFFOLK. NAYLAND. GIFFORD'S HALL. Early 16th century. Hall door from courtyard
(at one time plaster-rendered) having much good brick detail.



ESSEX. PEBMARSH. PORCH OF CHURCH OF ST. JOHN THE BAPTIST. Early 16th century. Crenelated offsets are also found at Colne Engaine Church Porch and on a chimney at Stock Street Farm, Gt. Coggeshall. Right and left of the fourth offsets triangular headers have been carved with trefoils in slight relief.



ESSEX. SANDON. ST. ANDREW'S CHURCH PORCH. c. 1502. A sturdy design having good brick detail.



ESSEX. FEERING. ALL SAINTS' CHURCH PORCH. Early 16th century. The arch has a double label—four centred and square. The roof is brick vaulted and ribbed. The benches on each side of the interior are of brick supported by three-centred brick arches. The crocketing of the finials is ingeniously worked with chamfers and simply moulded cut bricks. Porch diapers are soft greys below, becoming darker as further from eye.



NORFOLK. EAST BARSHAM MANOR HOUSE. Gatehouse. c. 1535. This is entirely brick (purpose-moulded, cut and carved). The coat of arms, Henry VIII's, are formed by building-in projecting lumps of soft brick (each rising three to four courses of the walling brickwork), and carving the arms *in situ* as Henry VII's arms are carved in stone over the hall doorway, which can be seen through the arch. The figures of porters (under canopies) on each side of the arch, which have been mutilated, are similarly worked.



ESSEX. LAYER MARNEY TOWERS or HALL. c. 1520. Doorway on N. side. The hollow moulding is wide and deep.



ESSEX. LAYER MARNEY. ST. MARY'S CHURCH. c. 1520. S. Porch. W. doorway built up. Above drip is crowstepped capping. Much plaster-rendering remains.



SUTTON PLACE, near GUILDFORD. c. 1525. N. doorway from court to hall, of buff terra-cotta. Above are terra-cotta plaques, each bearing amorini and separated by red brick or terra-cotta balusters.



SUFFOLK. WEST STOW HALL. Gatehouse. 1520-33. All red brick of varying colours.
 Brick tracery over archway of different design from that at Gifford's Hall, p. 258.
 Modern re-pointing has not yet toned down.



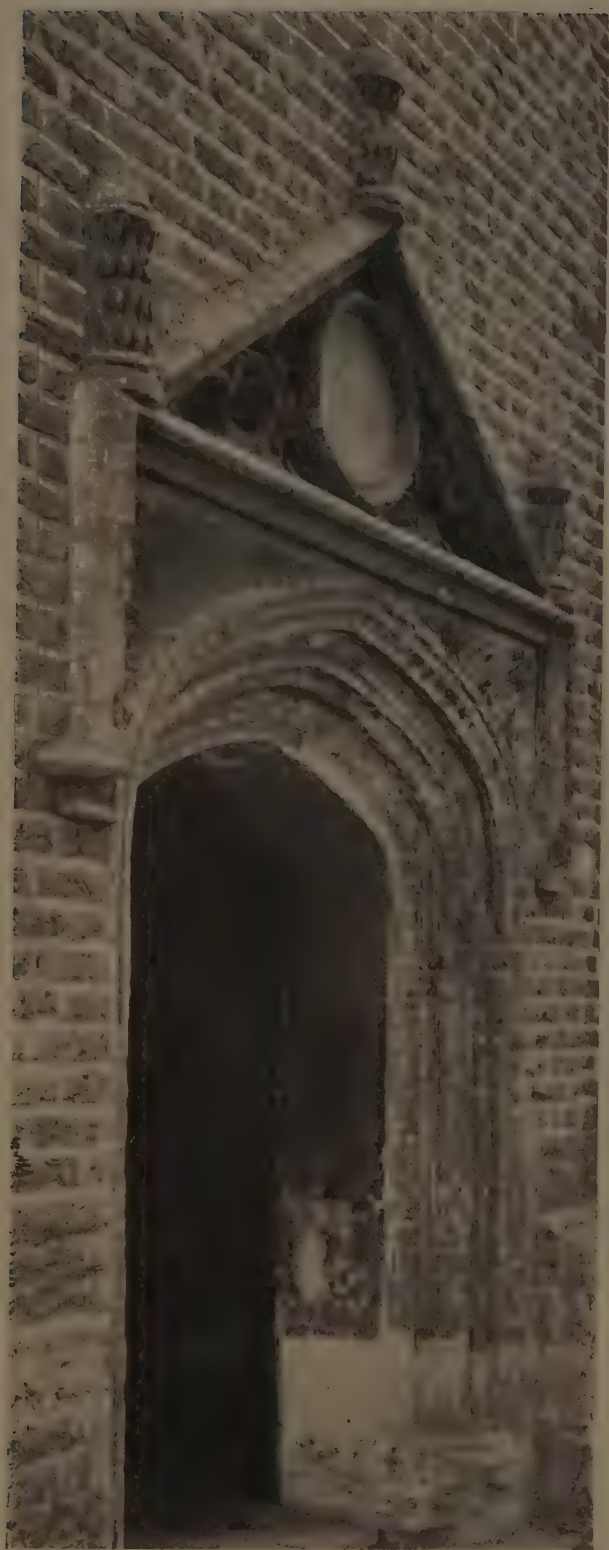
ESSEX. LITTLE LEEZ or LEIGHS PRIORY. Built after 1536. Inner doorway of outer gatehouse. The carving in spandrels was done after building.



KENT. TENTERDEN. BRUNGER'S FARM. Porch. c. 1540. Crowstepping which continued to be used to the end of the 17th century. The final step has been turned in resetting. See Well House at Hales Place, Tenterden, p. 155.



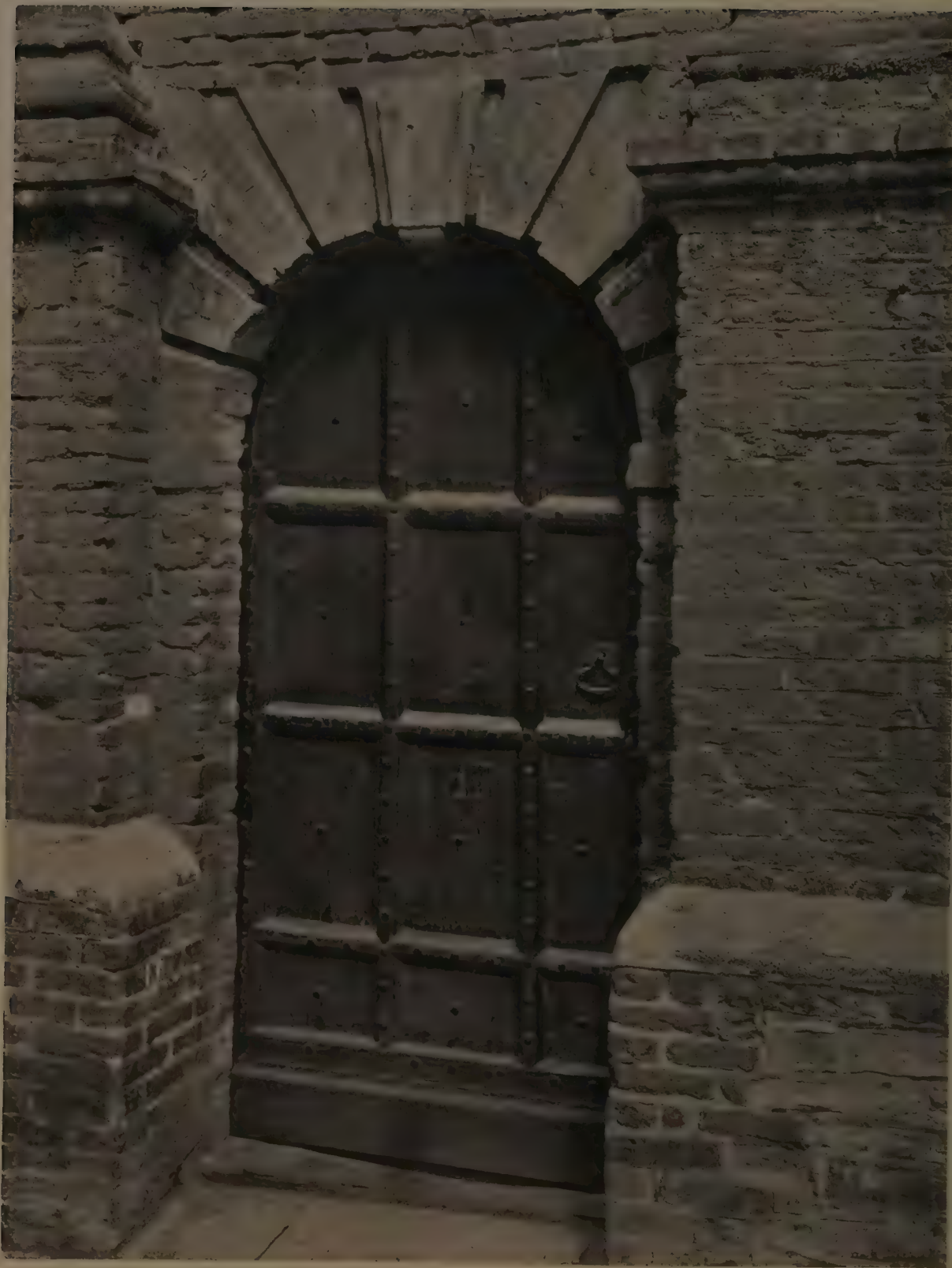
KENT. LITTLE CHART. CALE HILL STABLES. 1st half of 16th century. The door lintel and jambs are of stone. The panel, pediment and ornament, together with the window mouldings, are brick plastered.



ESSEX. BARKING. EASTBURY MANOR HOUSE. c. 1550. N. Entrance doorway of cut brick plastered.



EASTBURY MANOR HOUSE. Detail of doorhead in cut brick.



SUSSEX. RYE. POCKOCK'S SCHOOL. Before 1638. Detail of doorway, see p. 181.



KENT. ROCHESTER. RESTORATION HOUSE. Brick Porch. The house, built 1587, was re-fronted with brick about 1640. The arches are roughly gauged.



SUSSEX. BARNHAM COURT. c. 1646. Cut red brick doorway in Doric order. Thick tiles are used for fillets.



KENT. OLD CHARLTON CHURCH. Mouldings hand cut. The pediment probably rebuilt.



LONDON. 3 KING'S BENCH WALK. c. 1677. Sir Christopher Wren. Rubbed and gauged brick.



LONDON. 4 KING'S BENCH WALK. d. 1677. Sir Christopher Wren. Rubbed and gauged brick. Compare the treatment of the spandrels with those at Little Leez, p. 268.



LONDON. 5 KING'S BENCH WALK. c. 1677. Sir Christopher Wren. Bricks, $7\frac{3}{4} \times 3\frac{1}{2} \times 2$ ins.; four courses rise $8\frac{1}{4}$ ins. Gauged, fine joints. The Corinthian capitals are of stone.



HERTFORD. 28 ST. ANDREW'S STREET. c. 1720. Capitals built up and carved.



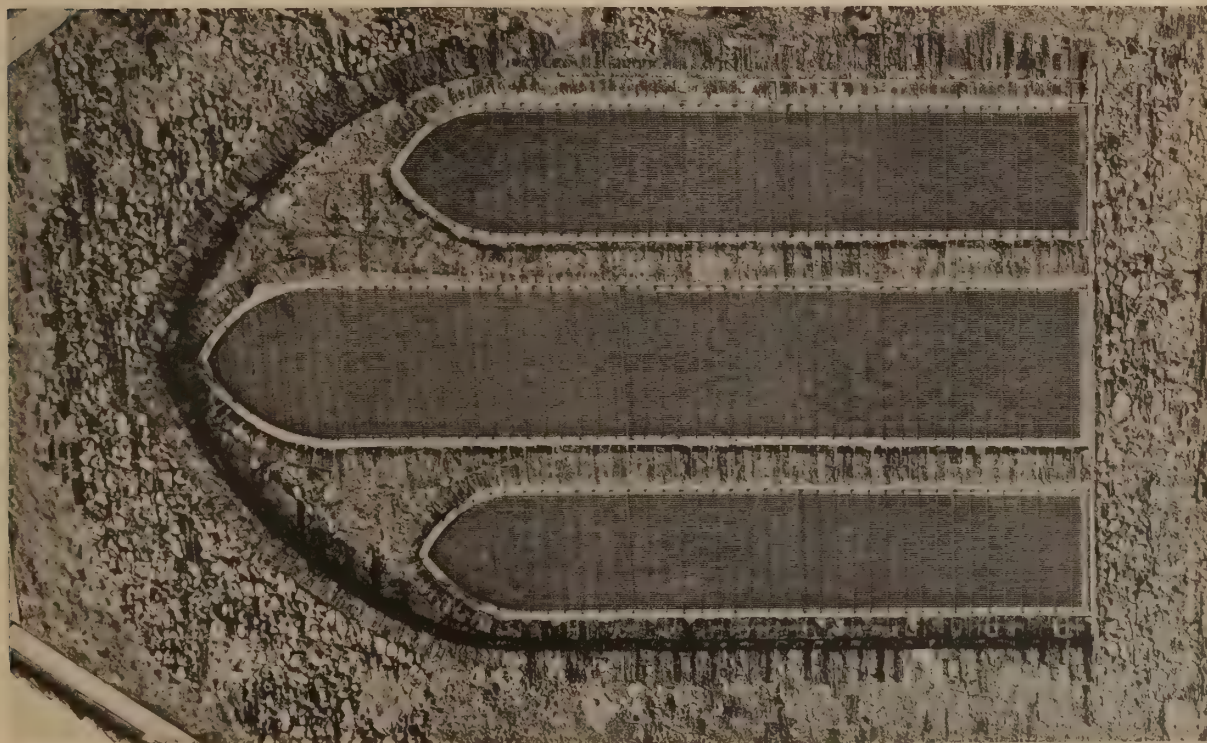
SURREY. FARNHAM. The Convent, Longbridge. d. 1717. Front and angle views of cut, gauged and carved brick doorway.



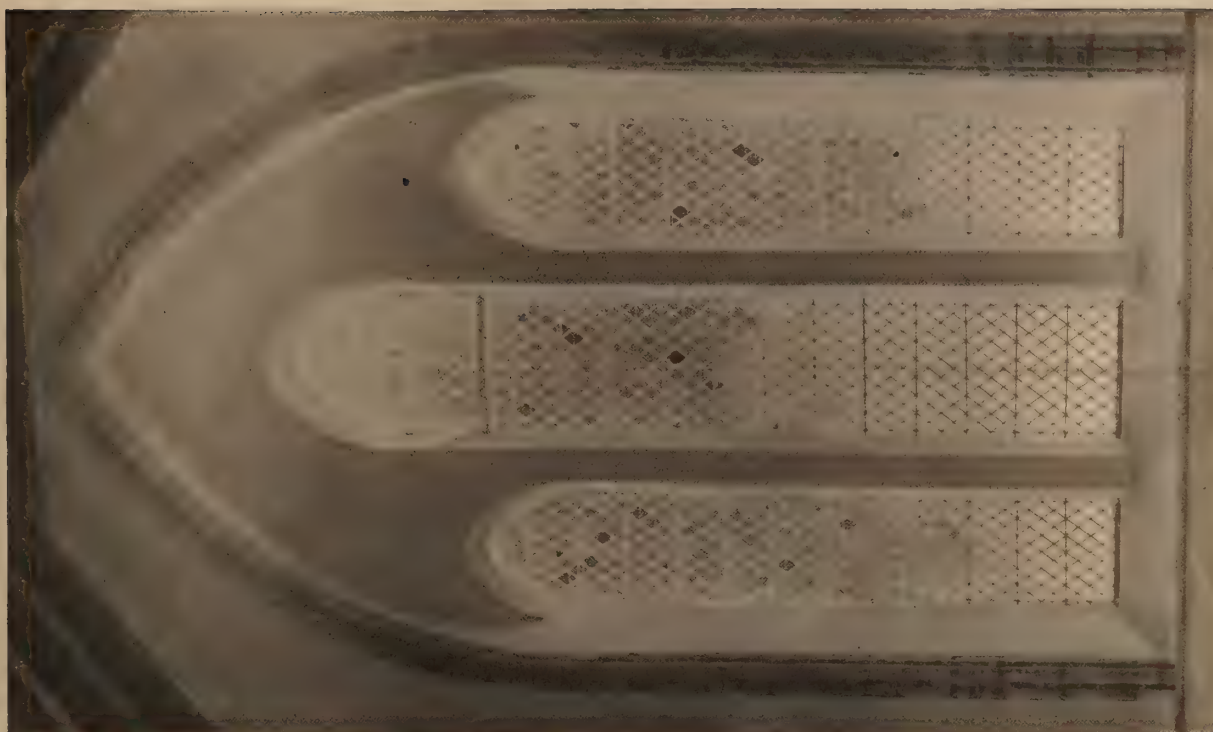
SURREY. RICHMOND. Gauged red brick doorway at 3, Parkshot. Late 18th century.
The hollow is a quarter ellipse.



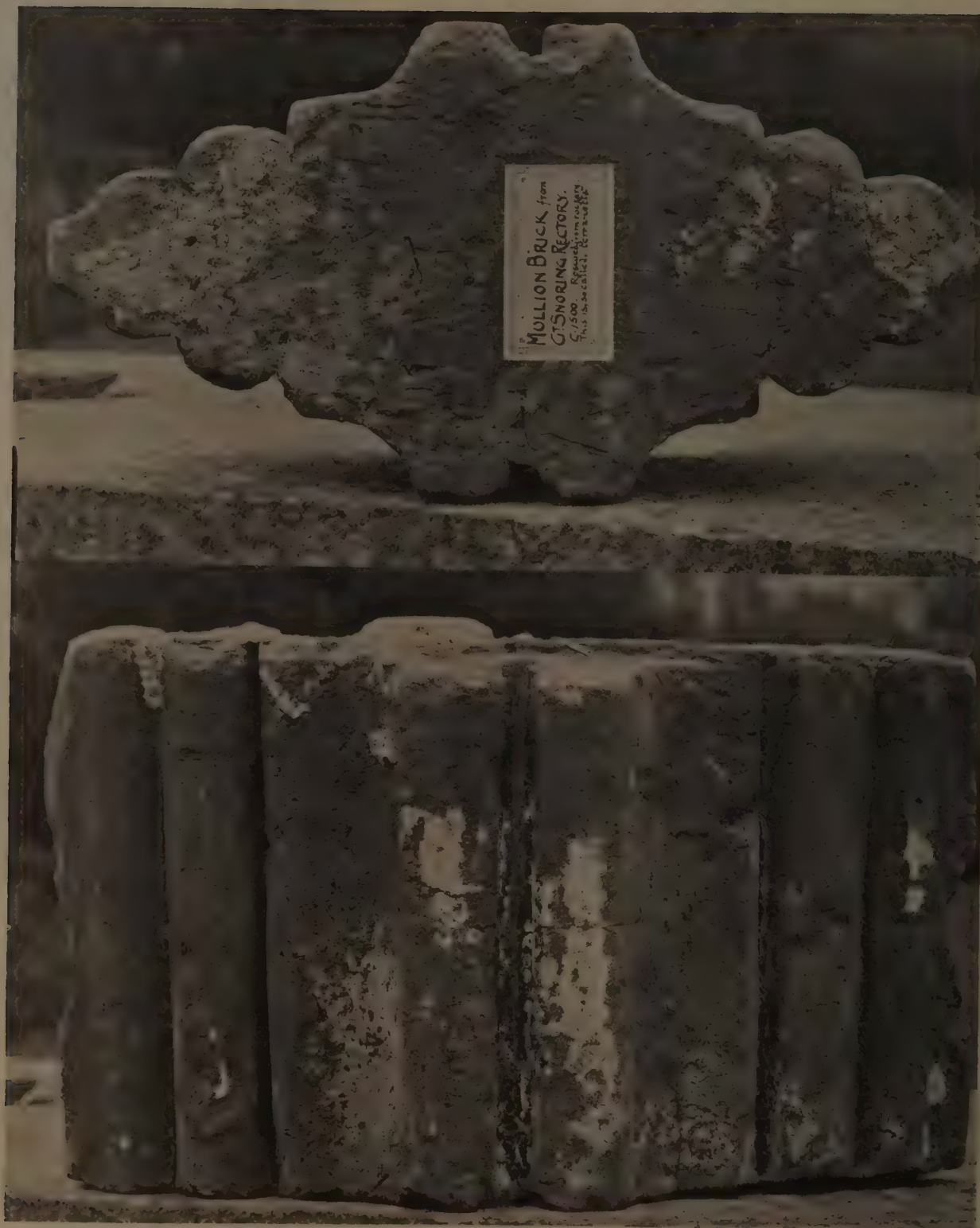
ESSEX. LITTLE COGGESHALL. ABBEY, detached building. c. 1200. Brick lancet windows, splayed jambs. Bricks, $12 \times 5\frac{1}{2}$ to $6 \times 1\frac{3}{4}$ ins.



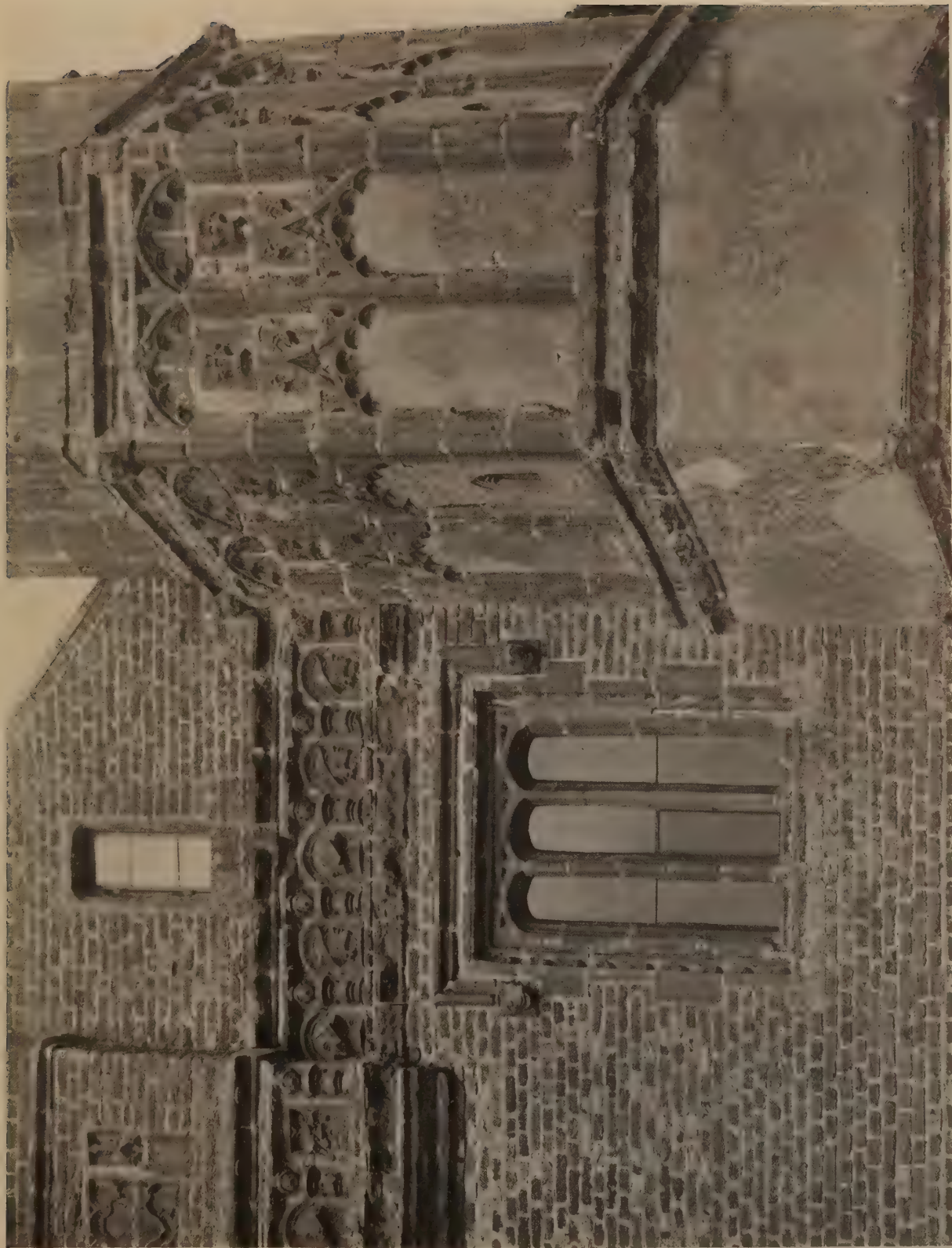
ESSEX. LITTLE COGGESHALL. ST. NICHOLAS CHAPEL. c. 1220.
Exterior E. window. The hollow chamfer is hand cut ; the
cores of bricks are exposed.



Interior W. window. The mouldings are purpose-moulded ;
probably finished by hand.



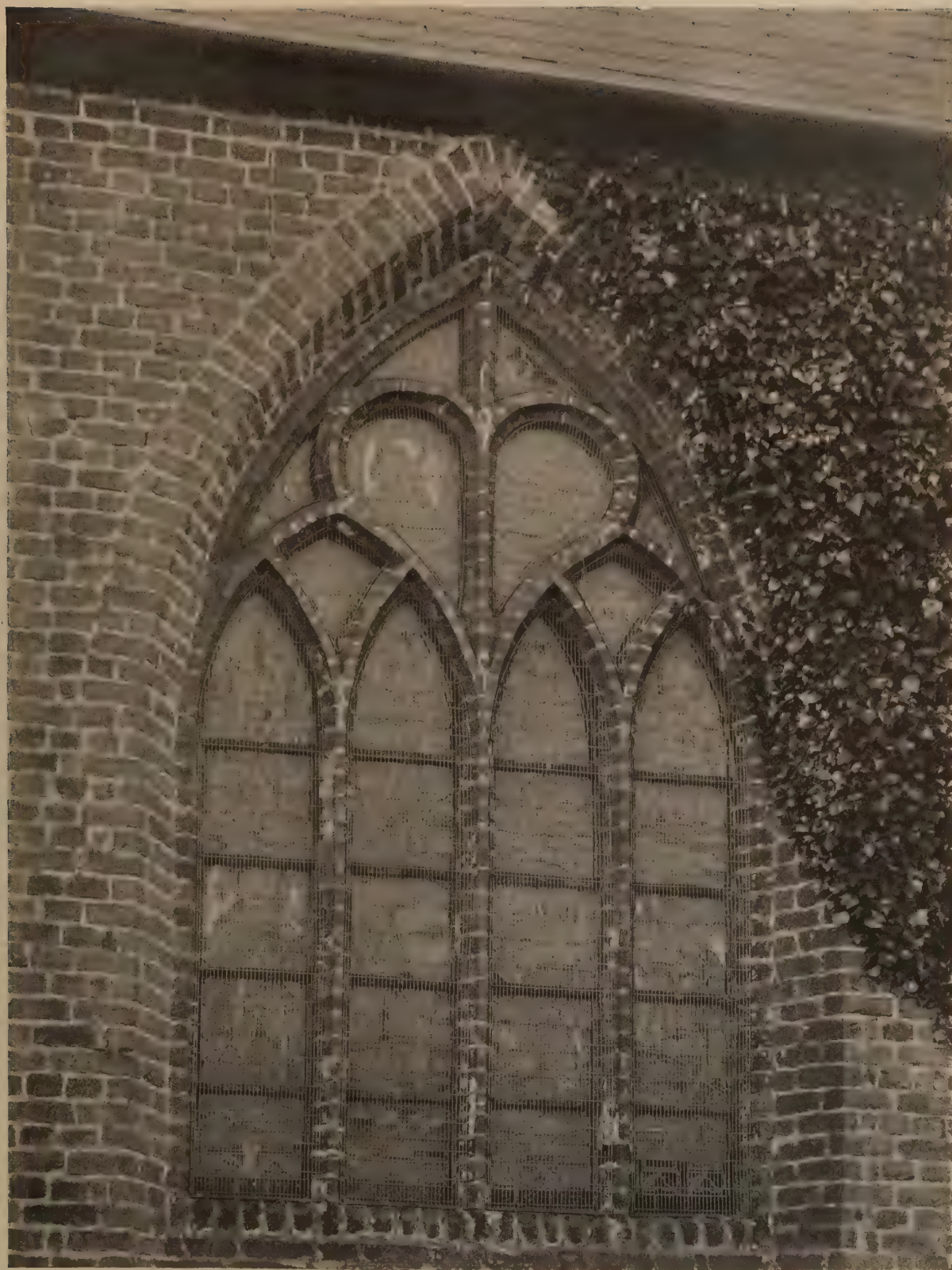
NORFOLK. GREAT SNORING. Purpose-moulded mullion brick from destroyed window at Great Snoring Rectory. Early 16th century. Colour, pinkish red. $9\frac{1}{2} \times 4\frac{3}{4} \times 5\frac{1}{2}$ ins. high. The brick still bears traces of plaster rendering.



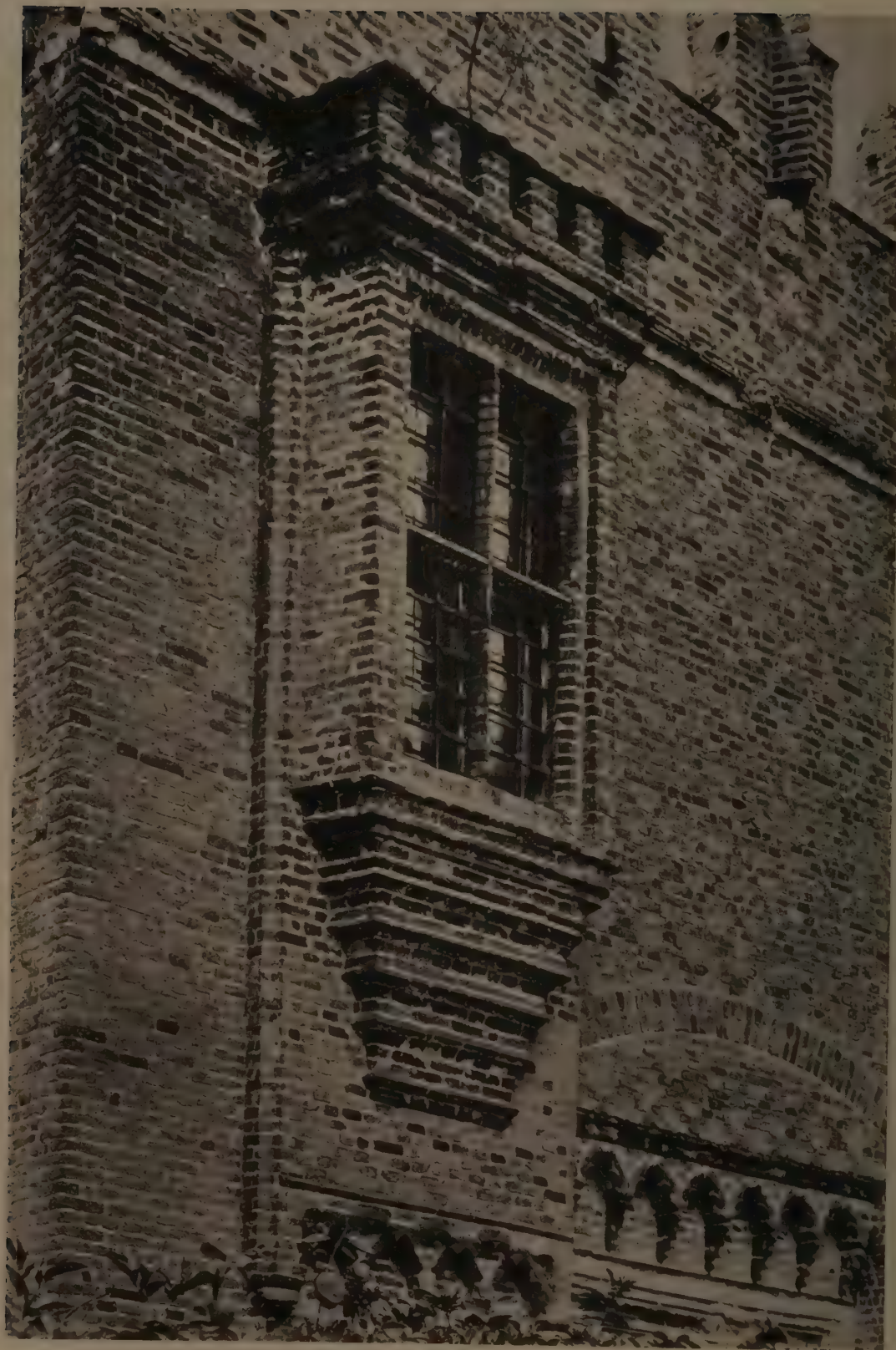
NORFOLK. GREAT SNORING RECTORY. Three-light window, restored. See drawing, p. 414. The turret panelling with cinquefoil canopies carved from lumps. The tablets bearing heads, and the balusters between are all brick.



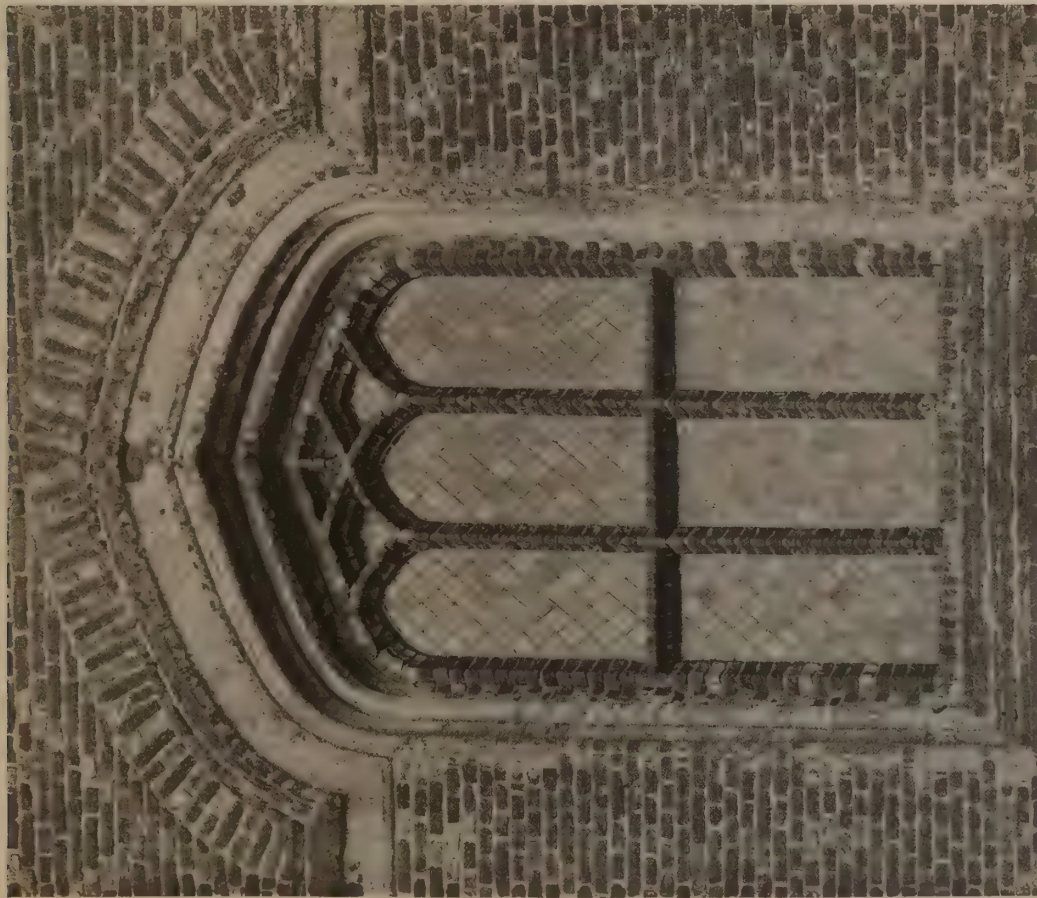
NORFOLK. EAST BARSHAM. MANOR HOUSE. c. 1525. Tower windows. See drawings, pp. 415-16.



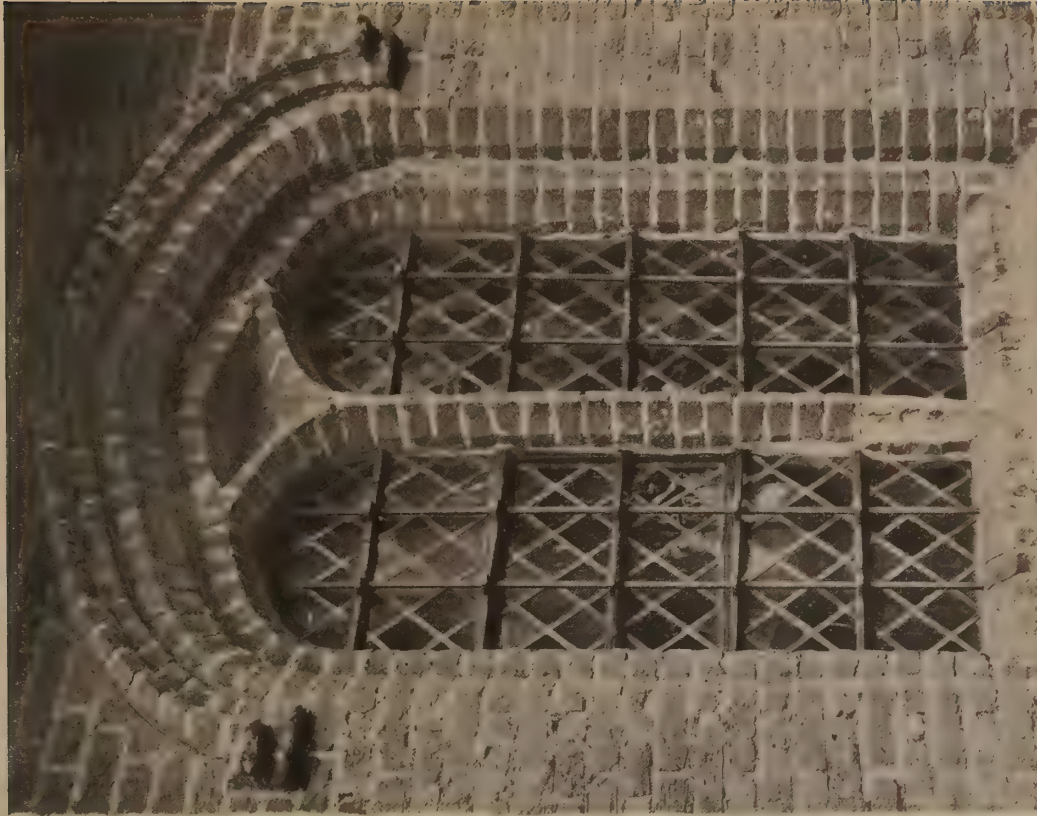
KENT. SMALL HYTHE CHURCH. c. 1507. N. window filled with brick tracery of Flemish character.



HERTS. HODDESDON. RYE HOUSE. Gatehouse. Oriel window. Compare with contemporary oriel in N. front of Faulkbourne Hall. Mullions have splayed chamfers.



ESSEX. LAYER MARNEY CHURCH. W. window, c. 1520. Hollow chamfers. The intersections of transom and mullions are contrived of ordinary bricks, hand-moulded, and set on end. Other intersections of the tracery are similarly formed. Such treatment is typical of the work of this period and presents a more pleasing appearance than would a large purpose-moulded brick. Inattention to such detail is one cause of the unsatisfactory nature of modern brick tracery, yet the cost of handcutting is very small; see p. 74.



ESSEX. CHIGNAL SMEALEY CHURCH. S. window, early 16th century. Hollow chamfers. Hollow and splayed chamfers are better suited to brick mullions than is the ovolo moulding, of the Elizabethan period, of which so many excellent examples exist in stone. In stone there are but few horizontal joints, but the effect of the many horizontal joints of a brick mullion is to increase its apparent thickness, producing a "fat," coarse result.



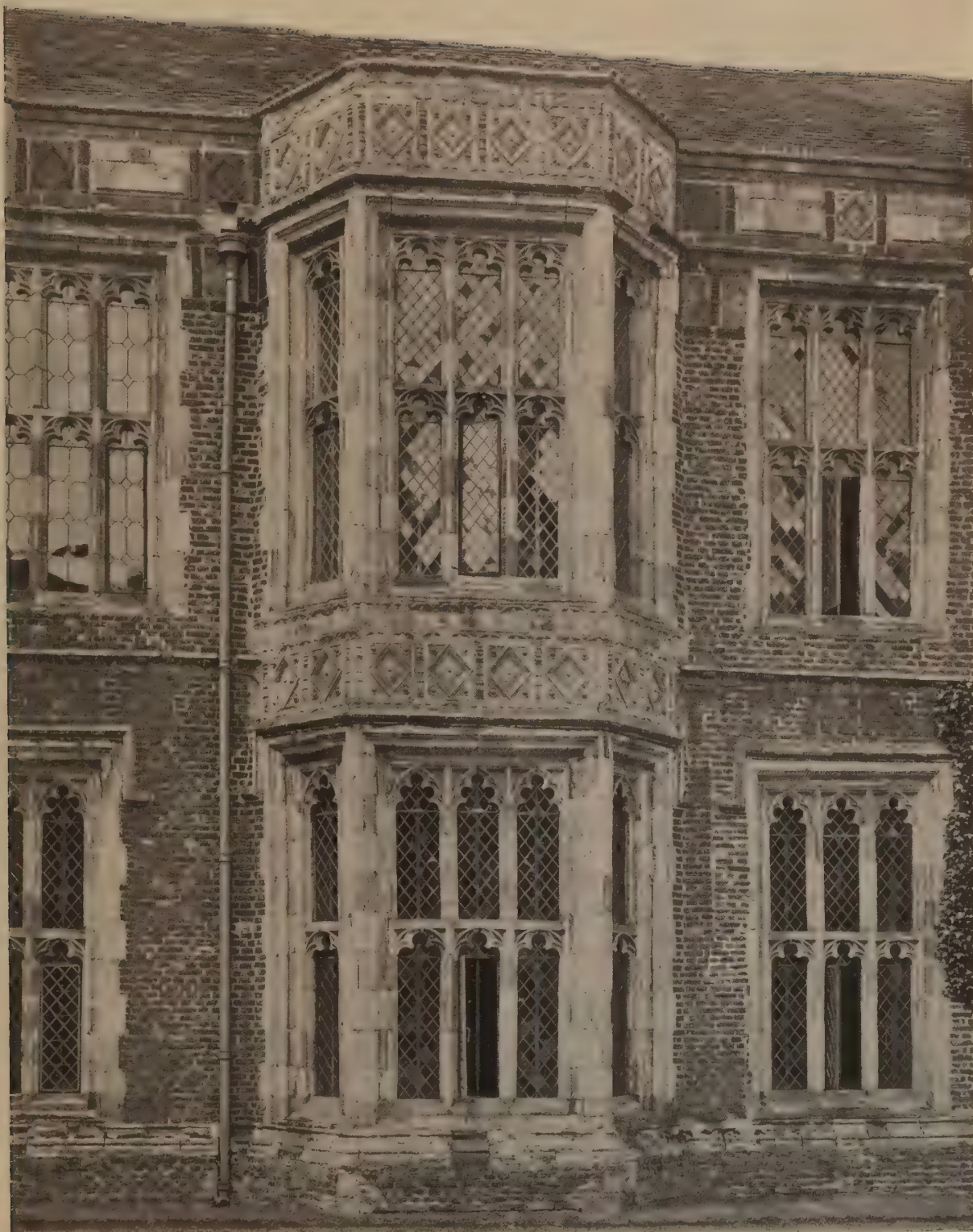
ESSEX. LAYER MARNEY TOWERS or HALL. c. 1520. Terra-cotta windows (cream colour), designed and made by Italian workmen. Immediately below is a string-course in which Renaissance details (egg and tongue moulding and guilloche ornament) are supported by a trefoil-arched Gothic corbel table. Below this again are typical Tudor window heads.



ESSEX. LAYER MARNEY TOWERS or HALL. Interior of terra-cotta window over N. doorway of gatehouse. Colour, cream.



ESSEX. LAYER MARNEY TOWERS or HALL. c. 1520. The first floor oriel window projects only slightly until up to the corbelling of the hood, where it increases. The moulded string is carried up over the ground floor window as a label. The window mouldings combine rounds and hollows.



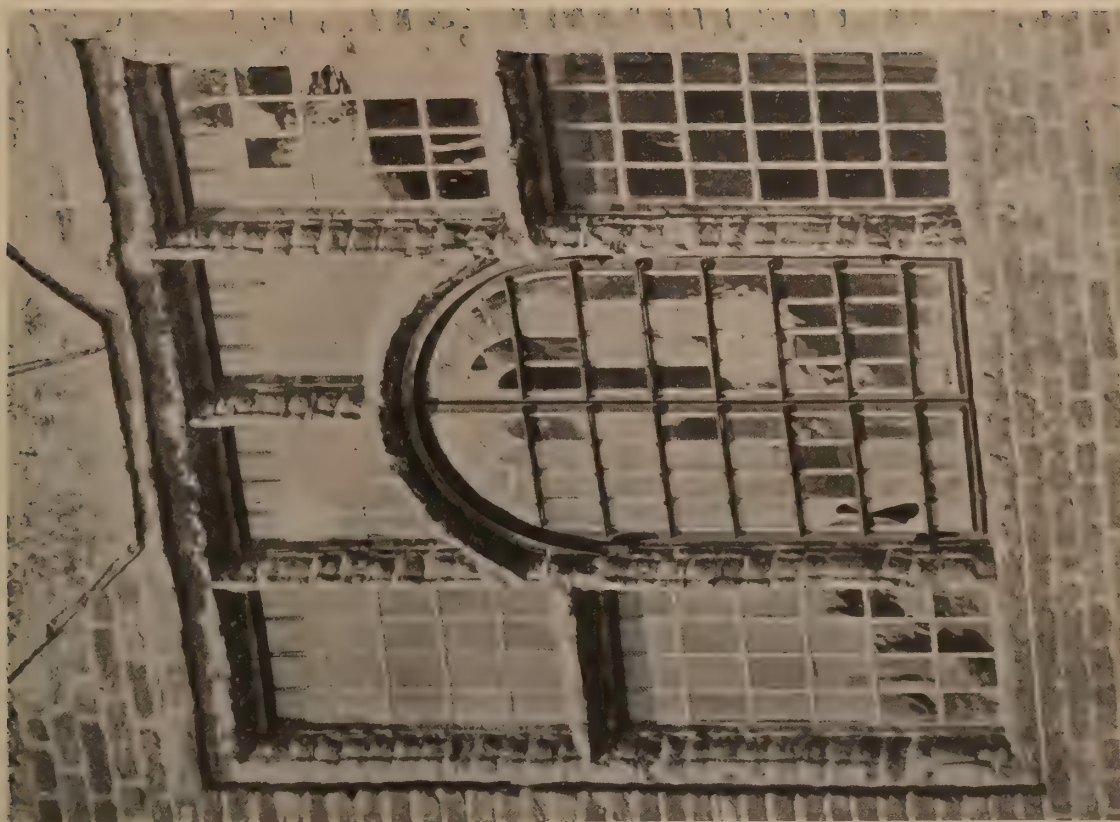
SURREY. GUILDFORD. SUTTON PLACE. c. 1523-7. Terra-cotta bay window of W. wing facing court. Detail drawing, p. 417.



SURREY. GUILDFORD. SUTTON PLACE. c. 1523-7. Four-light terra-cotta window. The hollows are enriched with arabesques in relief.



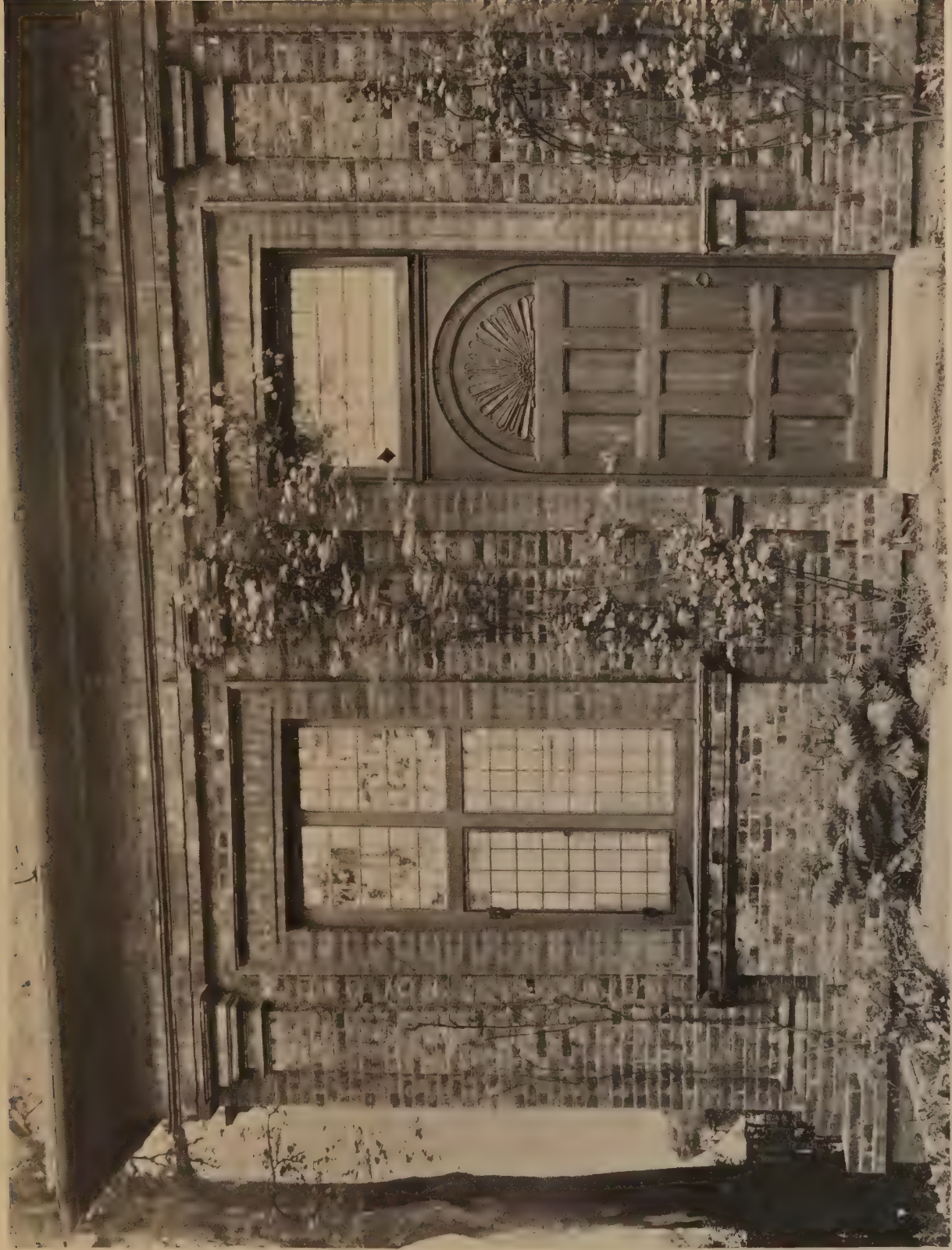
ESSEX. BARKING. EASTBURY MANOR HOUSE. c. 1550. Unrestored window, hollow chamfer moulding, rendered with plaster to represent stone. See drawing, p. 419.



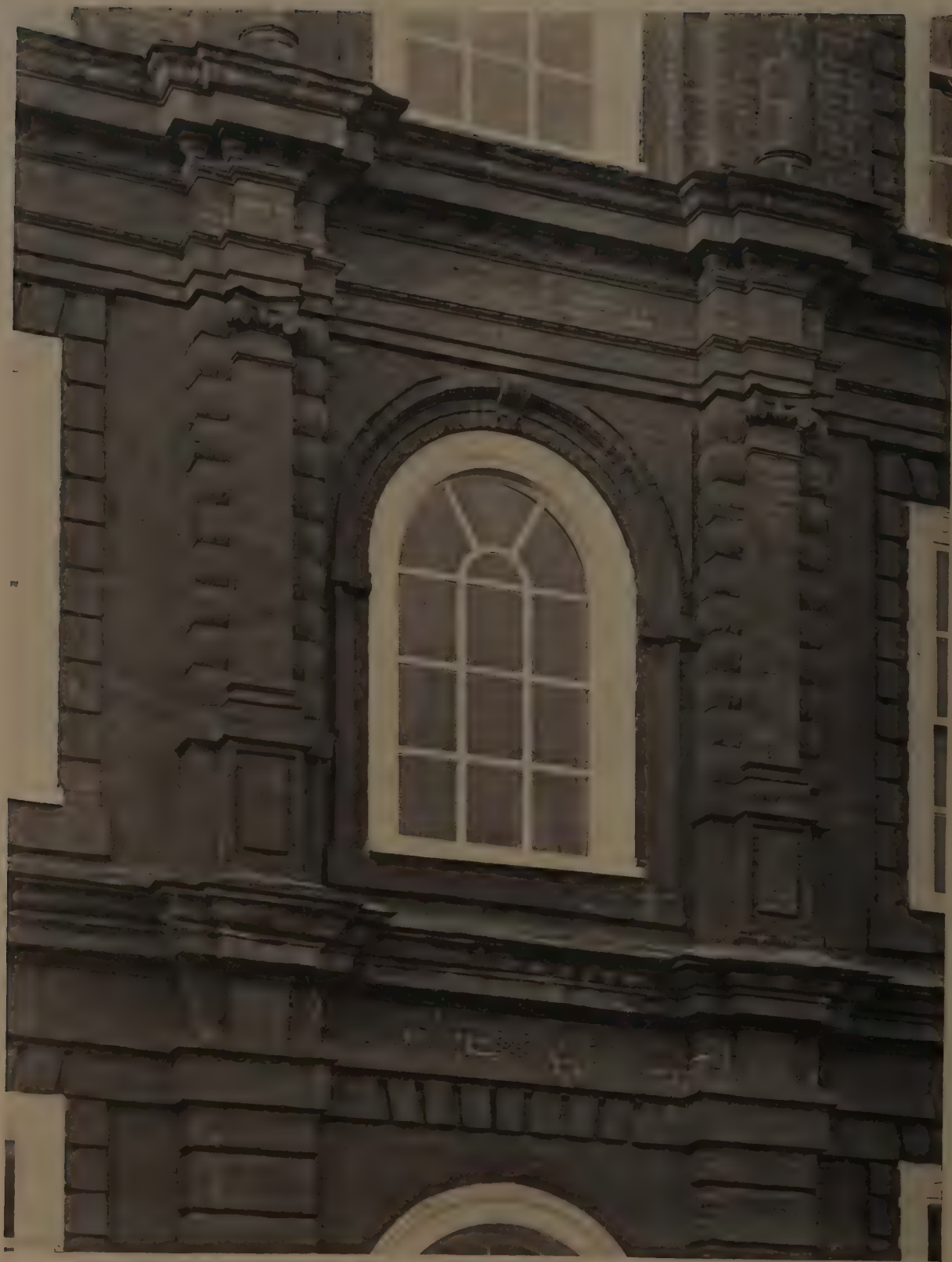
OXON. WATLINGTON TOWN HALL. b. 1664. An adaptation of the Venetian window to Gothic manner. Ovolo moulding.



SURREY. GREAT BOOKHAM. SLYFIELD MANOR. c. 1600. Outbuilding. The first floor window-label is continuous across the whole front. The wood frame of first floor window is original. Its ornament is similar to that of the brick pilasters.



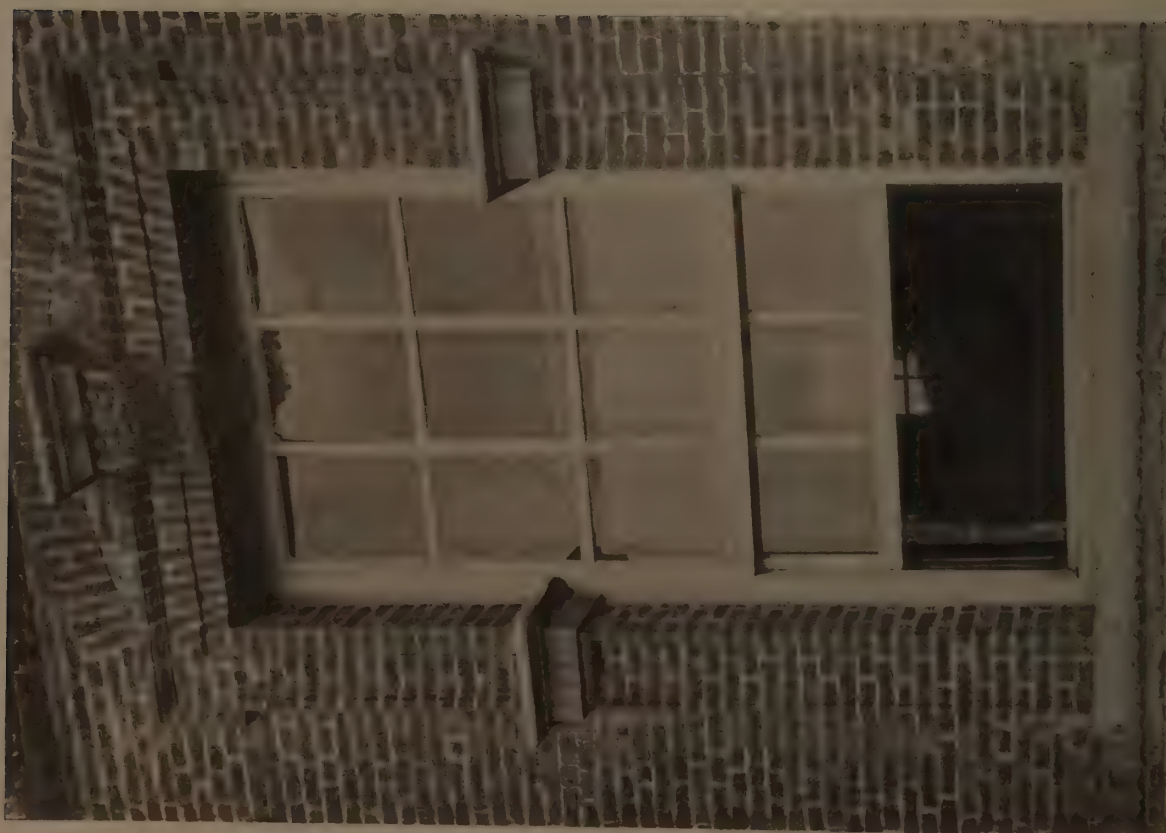
KENT. CHARLTON. Garden House at Old Charlton, attributed to Inigo Jones, mid. 17th century. The woodwork is not original. Parts of this elevation have been rebuilt.



Kew PALACE. d. 1631. Very early gauged work. Ionic capitals gauged and carved.
18th century woodwork.



SUSSEX. RYE. POCKOCK'S SCHOOL. Before 1638. Detail of dormer window, &c. The ellipse, within the rectangle, is modern. Tiles of various thicknesses have been used to form fillets; see detailed drawing, p. 418.



HERTFORD. BALLS PARK. c. 1640. Window architrave.



TYTTEHANGER PARK. c. 1654. Architrave of centre window with carved brick volutes.



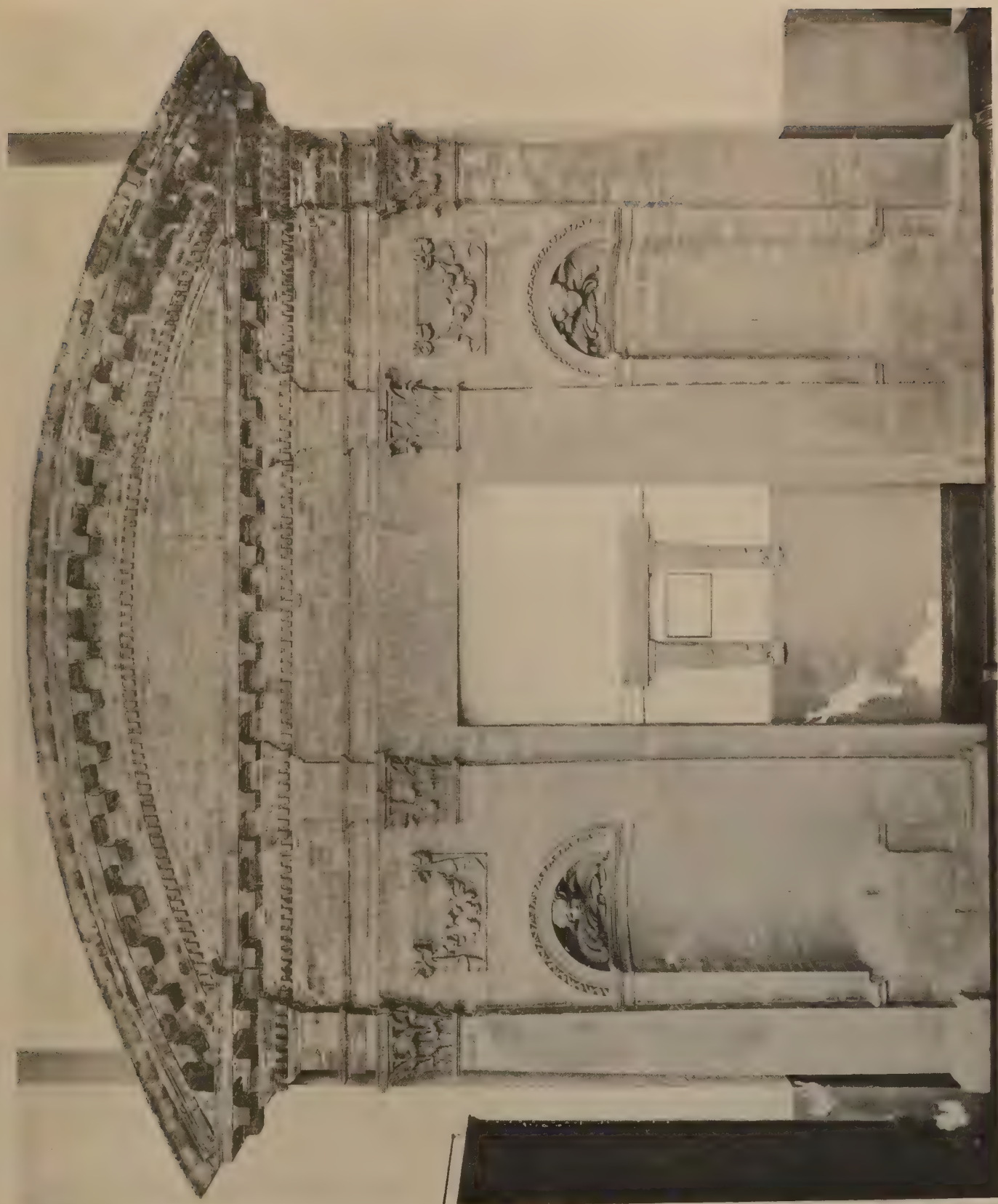
LONDON. HIGHGATE. CROMWELL HOUSE. c. 1650. Architrave of centre window with carved brick volutes. See drawings, pp. 399-401.



LONDON. HIGHGATE. CROMWELL HOUSE. c. 1650. Window architraves, &c. See drawing, p. 402.



KENT. GOODNESTONE. RICHARD'S CHARITY ALMSHOUSES, 1672. Moulded brick window rendered with plaster. The mouldings, sections of which are shown, are similar to those of windows at Broome Park, c. 1635, and the left lead light is probably original.



MIDDLESEX. Window Pediment from house at Enfield, now in Victoria and Albert Museum, late 17th century. Perhaps the finest example extant of gauged, moulded and carved brickwork of the Wren period. The Corinthian capitals are built up of brick and carved.



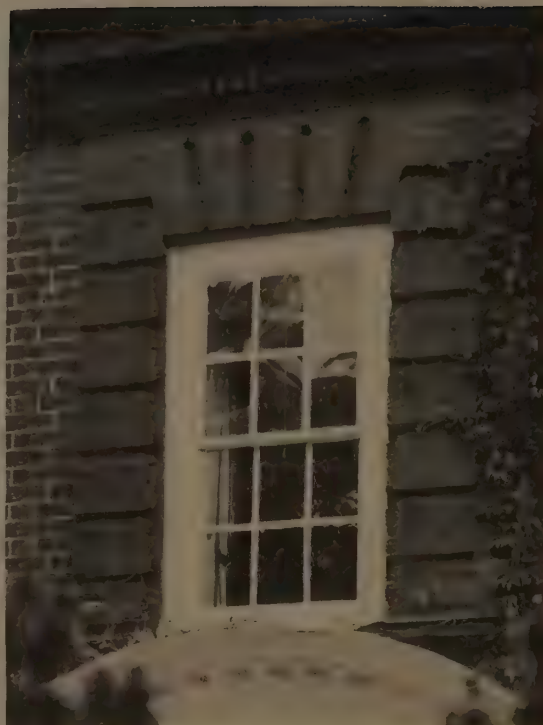
KENT. LARKFIELD, BRADBOURNE. d. 1714. Elliptic windows, blank windows and niche in gauged brick.



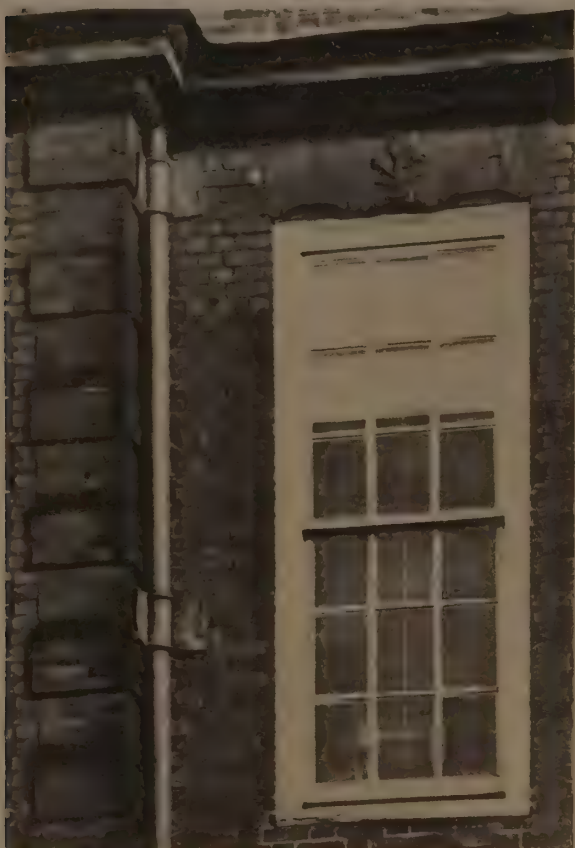
ESSEX. COLCHESTER. 37, CROUCH STREET. Venetian window in rubbed and gauged brick.



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1. Semi-elliptic window arch, Church House, Beckley, d. 1742.
2. Rusticated window at Red House, Sawbridgeworth.
3. Pallant House, Chichester, c. 1713. Carved brick keys.
4. The Grange, Farnham, d. 1702. The brick arch is unusual.



Photo Wreathall and Wright, Beverley.

YORKS. BEVERLEY. Archway at the Friary.



KENT. STURRY COURT. Entrance gateway (inside). Early 16th century. Modern coping.



KENT. TENTERDEN. HALES PLACE. Gateway. c. 1530. From within.



KENT. TENTERDEN. HALES PLACE. c. 1530. Angle view and front of gateway.



SUFFOLK. STUTTON HALL. c. 1530. Gateway, from without. The four-centred arch springs from piers having capitals of Renaissance character. The archway is plastered over the brick, and has crowstepped gable.



SUFFOLK. STUTTON HALL. Gateway, from garden. The arch is semi-circular, and the capitals from which it springs are more definitely of the new manner than those of the front. These are flanked by coupled Tuscan pilasters supporting an entablature; all rendered with plaster. The crowstepped gable of front is backed by a semi-circular pediment. The cut brick moulded finials with open, crocketed terminations are similar to those in front. Here we have notable architectural development from one elevation to another of the same structure.



KENT. CHISLET. Gateway at Brook Farm. A country builder's crude production of much vigour and dignity.



NORFOLK BRECCLES HALL. c. 1580. Entrance Gateway. Probably there were cut brick finials flanking the ellipses. The voussoirs are not cut to the radius, but now and then the extra thickness of joints is filled with pieces of brick and tile, roughly axed to wedge shape.



NORFOLK. BRECCLES HALL. Garden Wall Gateway.



SUFFOLK. ARWARTON HALL. Gateway, c. 1590.



WARWICKSHIRE. CHESTERTON. Gateway attributed to Inigo Jones, b. 1632. If the reputed date of building is correct, this is a very early example of gauged work. The bricks are deep red, of good colour. The necking and bedmoulds of the pilasters are carried through, but broken by the rusticated voussoirs of the arch.



MIDDLESEX. ENFIELD. FORTY HALL. Entrance Gateway to Courtyard. Reputed to have been designed by Inigo Jones for Sir Nicholas Raynton. c. 1633. The finials were formerly surmounted by stone balls. The rustications of the large arch and the flat arch over it are interesting as early gauging.



MIDDLESEX. ENFIELD. FORTY HALL. Gateway from within, attributed to Inigo Jones, c. 1633. A simple design producing fine effect by skilful handling of light and shade. Without being clumsy it has that solidity which characterised his work.

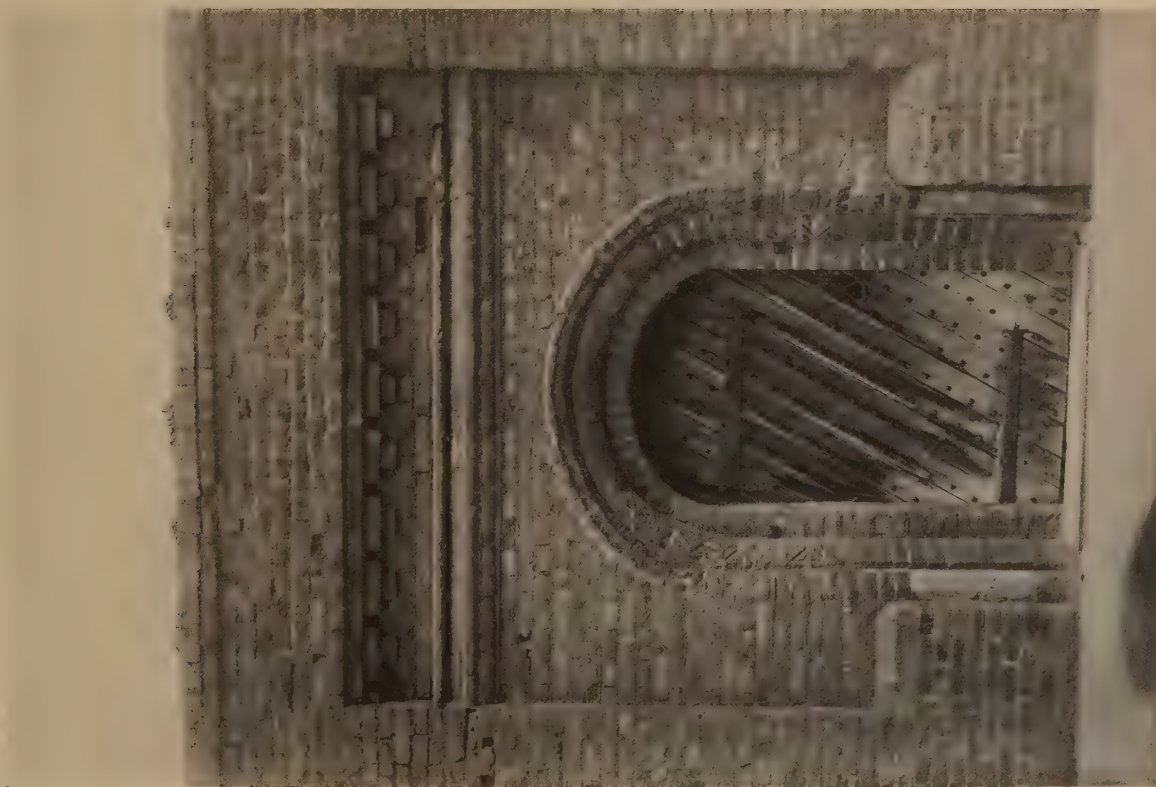
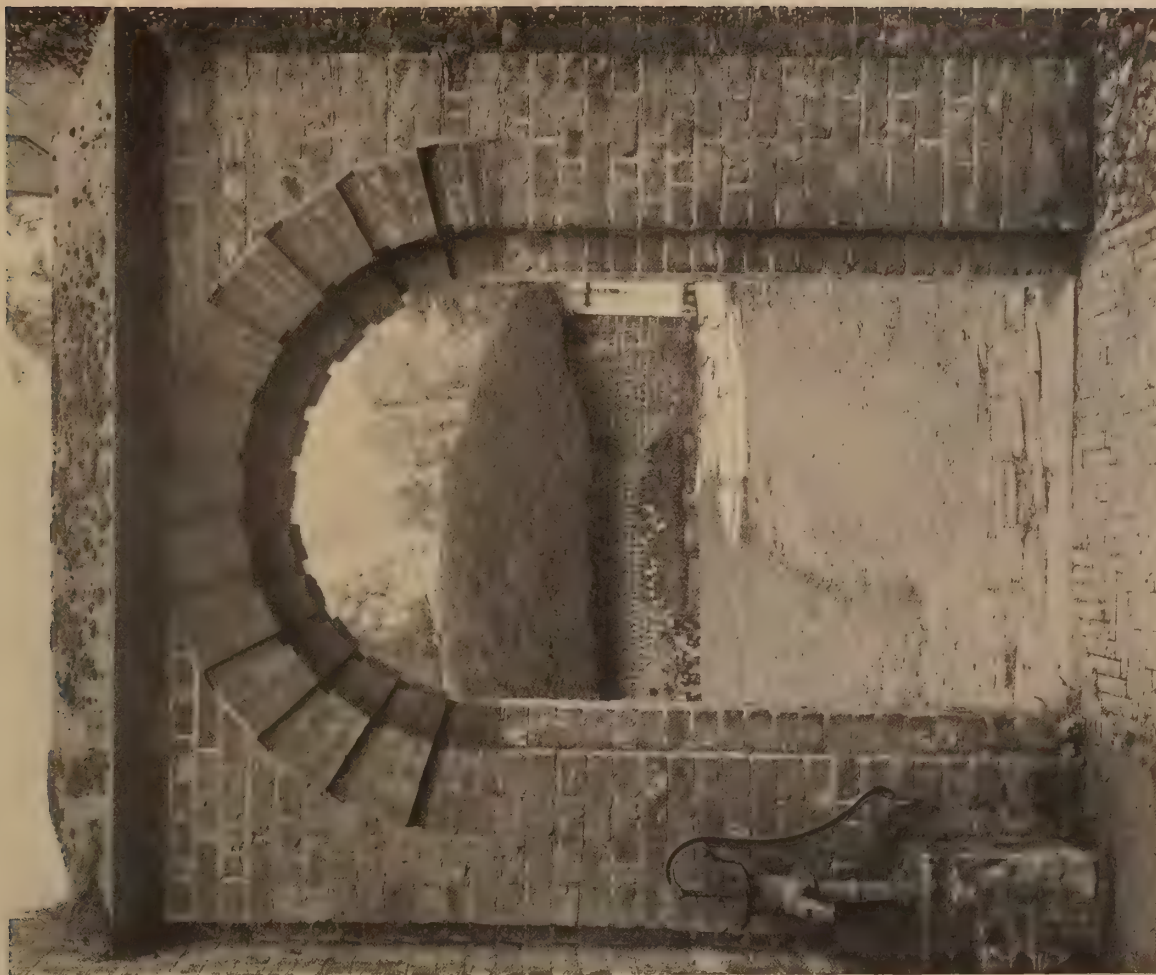
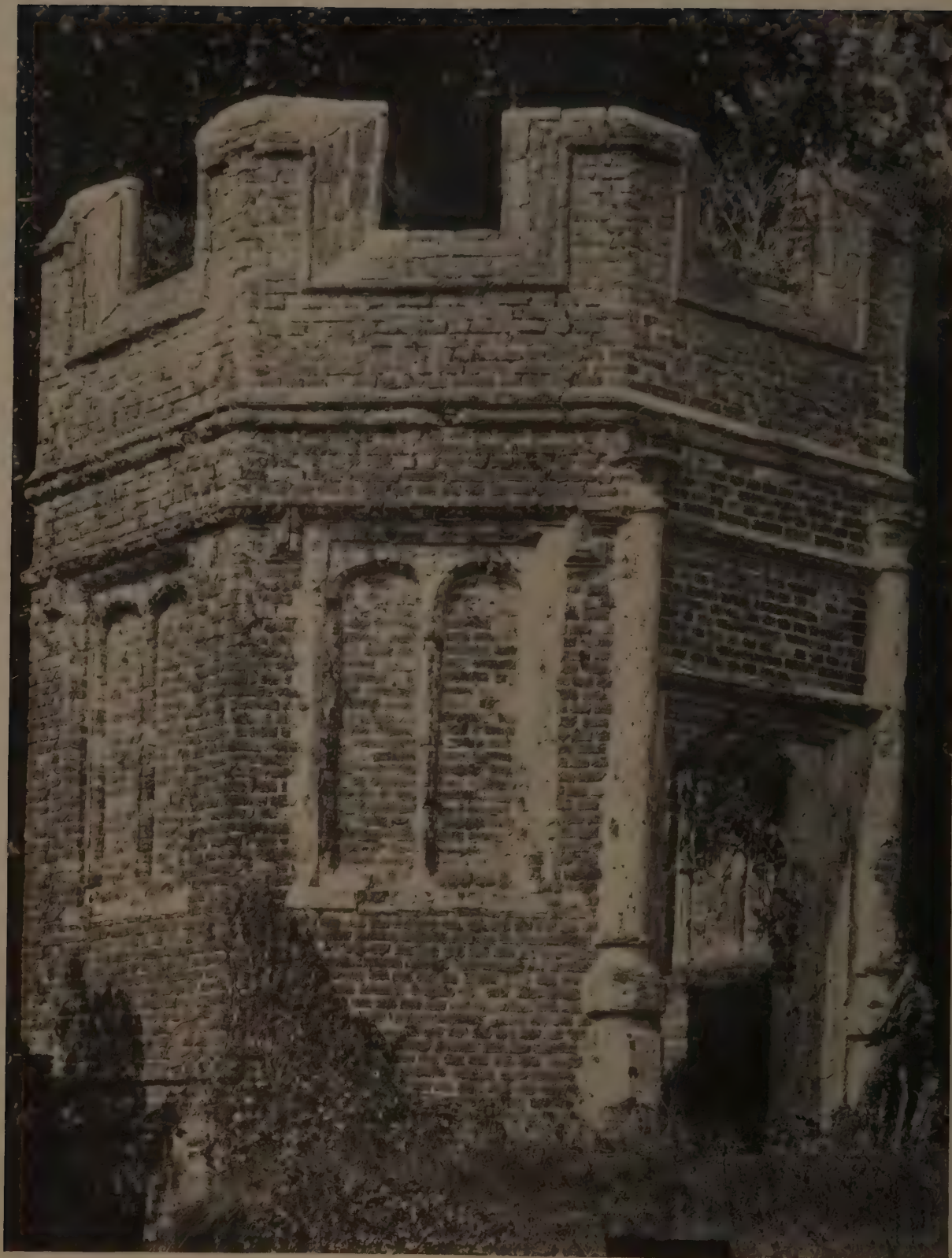


Photo by courtesy of Thomas C. Stubbs, Esquire.
 Lincs. SPALDING. Doorway from Old Star Inn, rebuilt in garden wall. The chevron moulding produced with two moulded bricks.



SUSSEX. BARNHAM COURT. Gateway to Courtyard.



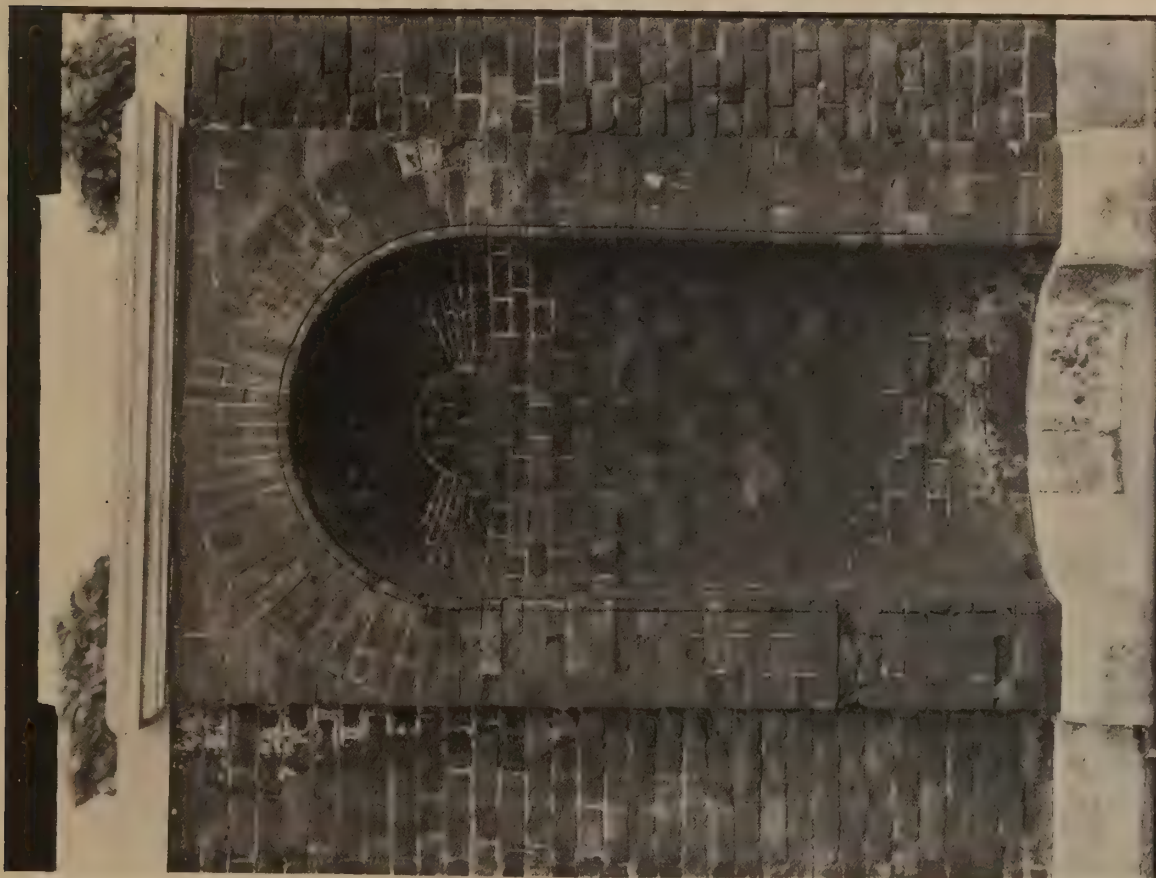
KENT. TENTERDEN. HALES PLACE. Garden Pavilion. c. 1530. Columns, doorway and windows plastered to simulate stone.



KENT. EAST PECKHAM. ROYDON HALL. c. 1535. Garden House, one of a pair.



ESSEX. MARGARETTING. KILLIGREWS, formerly Shenfield House. Early 16th century. One of the octagonal turrets at angle of moat, furnished with cruciform loops and entered at back by doorway with four-centred head.



MIDDLESEX. HAMPTON COURT PALACE. c. 1690. Niche by Sir Christopher Wren.



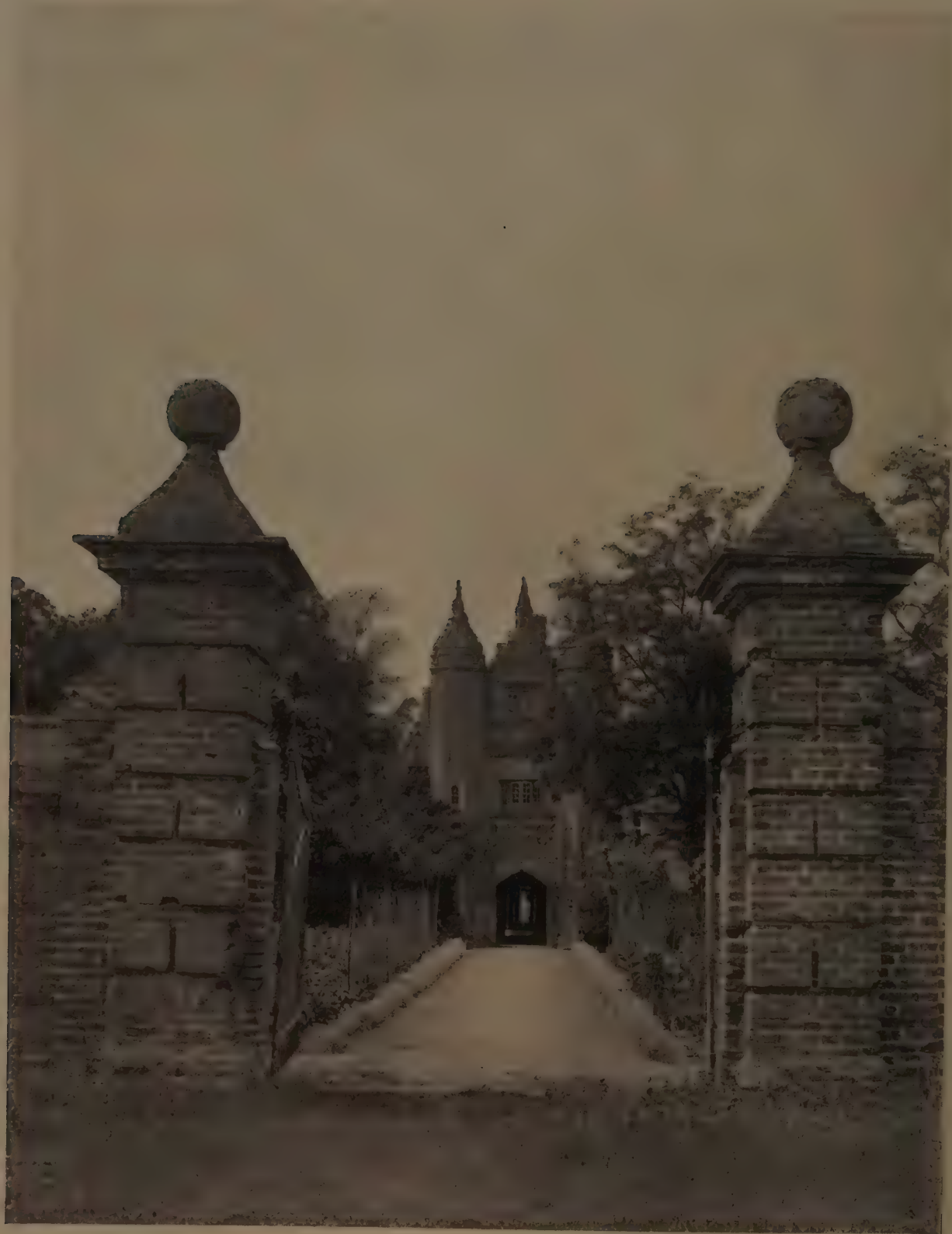
KENT. GOUDHURST. FINCHCOCKS. c. 1725. Niche over entrance.



BERKS. ABINGDON. CARSWELL or CASTLEWELL. Gauged brick niche with gauged and carved cartouche and key. d. 1719. Bricks, $8\frac{1}{2} \times 4\frac{1}{8} \times 2\frac{3}{8}$; four courses rise $9\frac{1}{2}$ ins.



KENT. TENTERDEN. FINCH DEN. Gate pier and wall coping. See p. 430.



SUFFOLK. WEST STOW HALL. Rusticated brick gate piers.



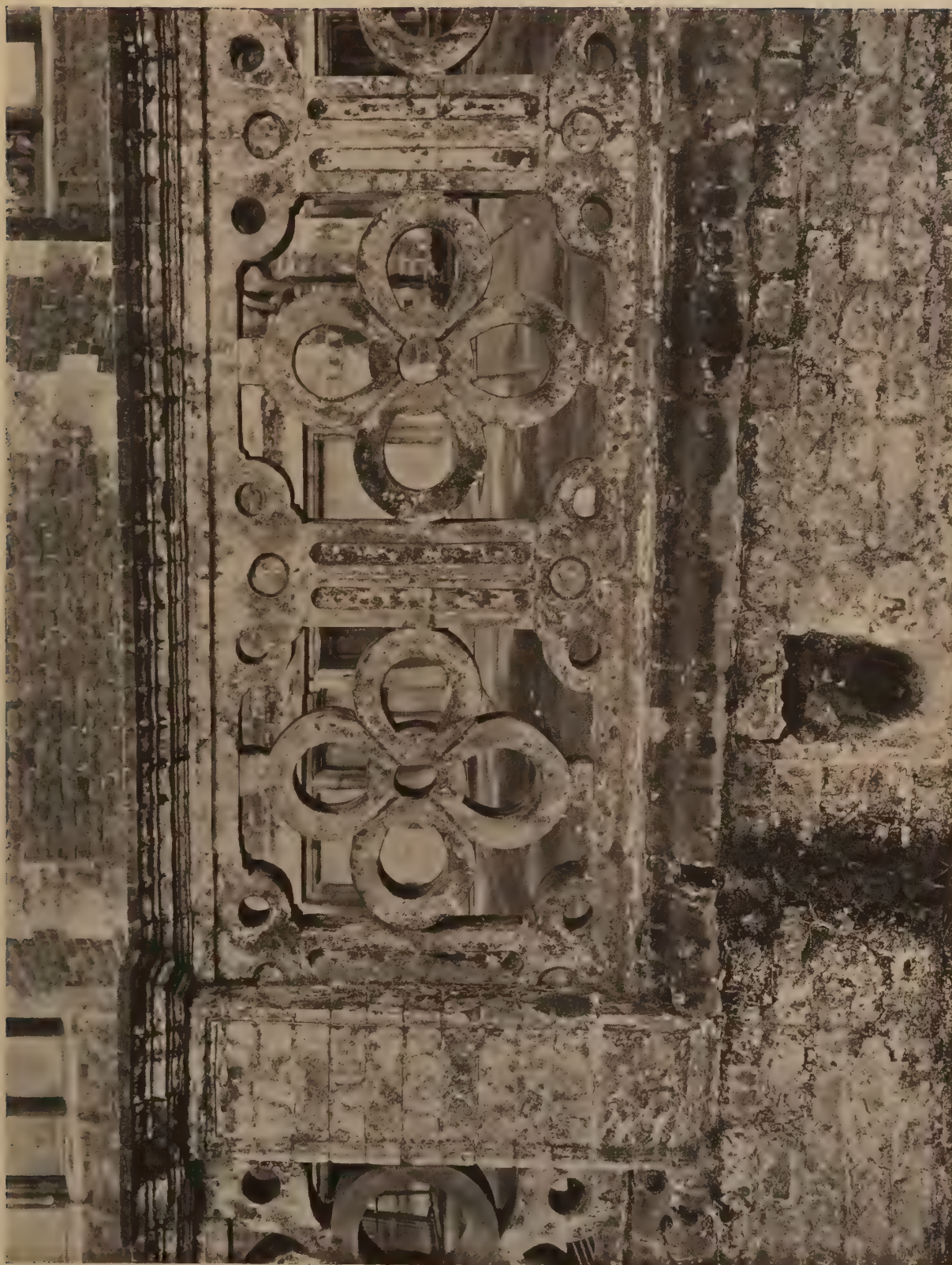
KENT. Near CANTERBURY. Late 17th century. Rusticated gate piers (formerly at entrance to a mansion), with stone consoles, capitals and ball terminals.



SUSSEX. NORTHIAM. Brick gate pier cap at Church House.



SUSSEX. NORTHIAM. Brick steps at Church House.



HERTS. HATFIELD HOUSE. Purpose-made brick balustrade to terrace. A similar pierced brick balustrade to roof. The panel of pier is pulvinated, the bricks being moulded to the swells. Bricks, $2\frac{3}{4}$ ins. thick; four courses rise $11\frac{1}{4}$ ins. Some are hand-cut and rubbed; gauging apparent. There are many patterns of pierced garden walls of various periods at Hatfield. The flat brick cornice-copings are particularly happy. See Bishop's Palace, S. front, p. 118, also N., S. and E. elevations of Hatfield House, pp. 169-171.



SURREY. MORDEN HALL. Wall coping of unmoulded brick.



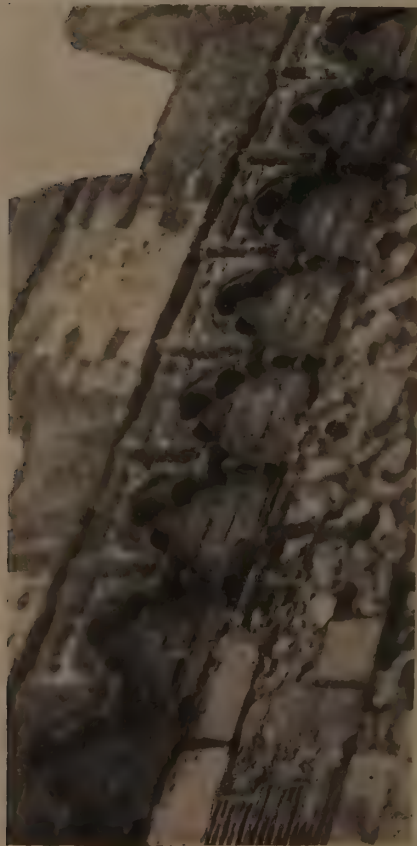
SUFFOLK. STUTTON HALL. Crenelated wall coping. c. 1530.



BUCKS. HOGGESTON. There are many variations of this type of coping.



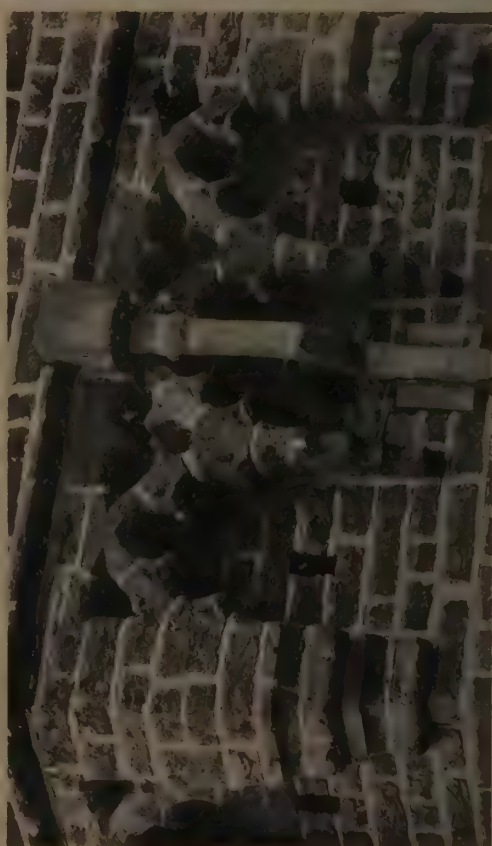
KENT. ROLVENDEN. GATE HOUSE. Wall coping. See also that at Cloth Hall,
Biddenden, p. 431.



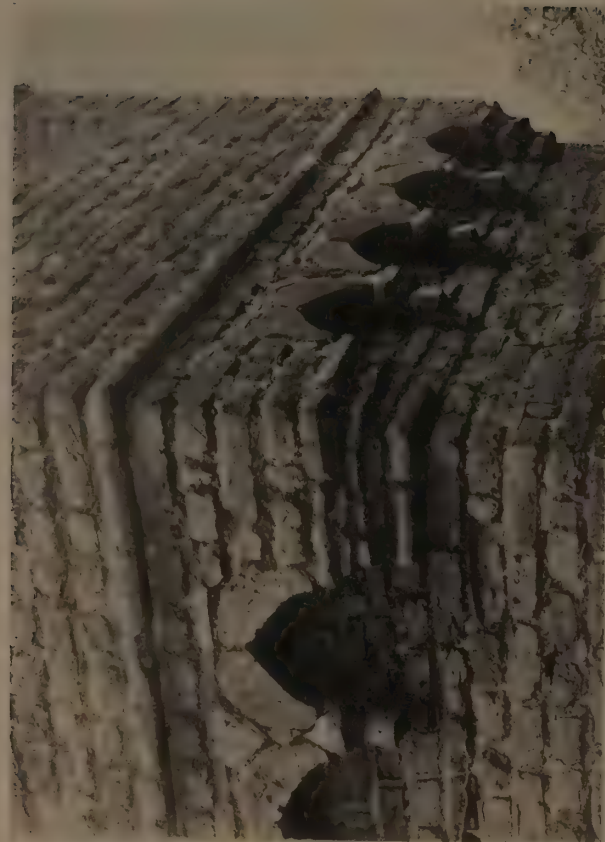
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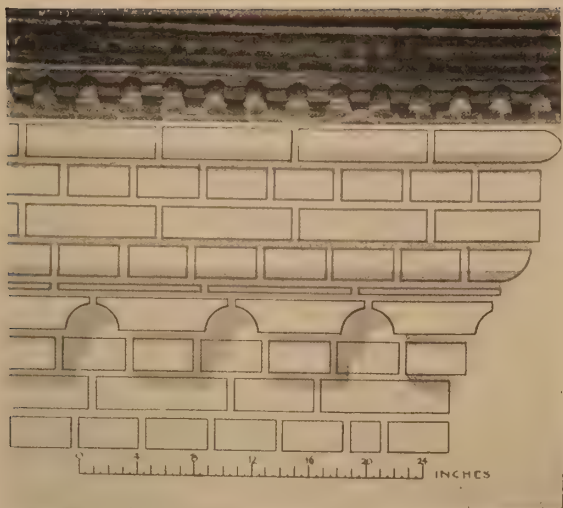


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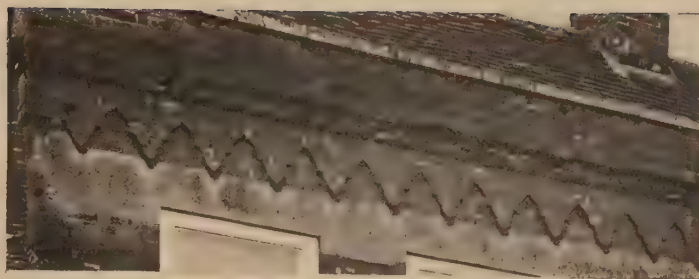


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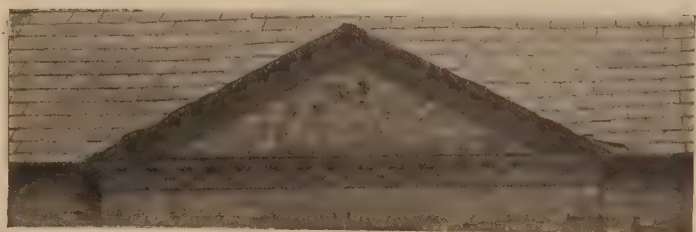
CORBEL TABLES, p. 81. 1. Redbourne Church, c. 1500. 2. Layer Marney Towers, c. 1520. 3. Faulkbourne Hall, before 1494.
4. Lullingstone Castle, c. 1530-40. 5. Little Leez Priory, c. 1536. See also brick machicolation corbels at Tattershall,
Caister and Farnham Castles, pp. 111, 130.



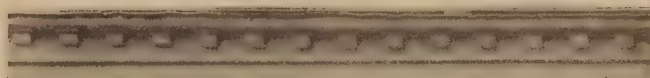
LITTLE CHART. CALE HILL STABLES. Eaves course.



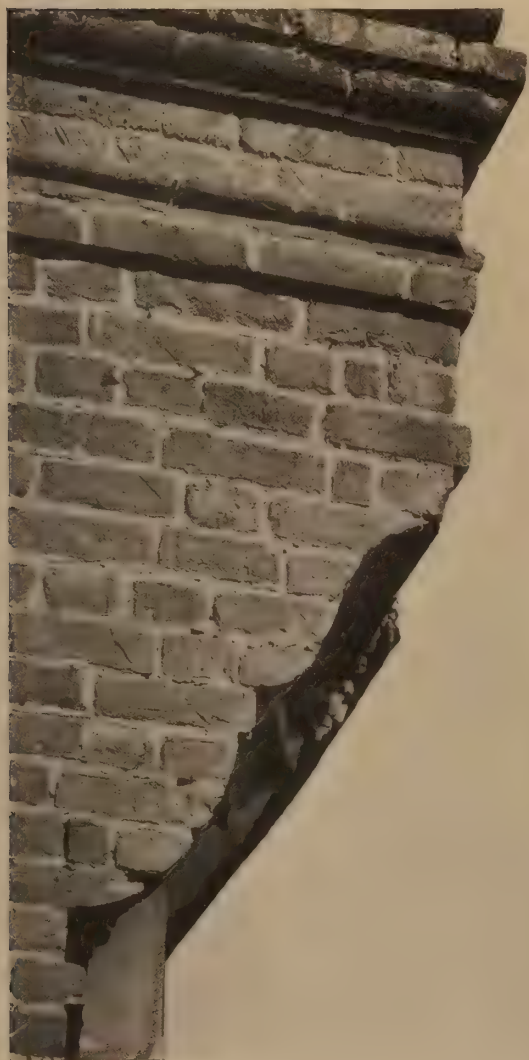
BUCKS. WENDOVER. Corbel course.



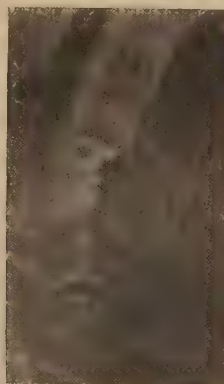
SUSSEX. ARUNDEL. Dentil eaves course used as cornice.



WINCHESTER. Corbel course, headers and tiles.



KENT. ELHAM. Corbelling of gable to over-sailing upper storey.



BARKING. EASTBURY HOUSE. Corbel.



COLCHESTER. MONTAGU HOUSE. Corbel.



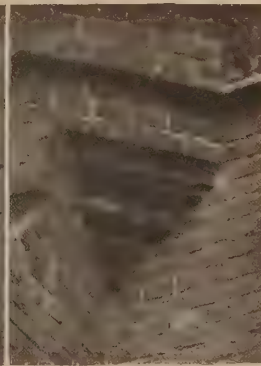
GRAY'S INN, W.C. Corbel.



LEWES. BARBICAN HOUSE. Corbel.



ESSEX. FEERING CHURCH PORCH. Corbel, internal angle.



ESSEX. HORNDON CHURCH. Corbel, internal angle.

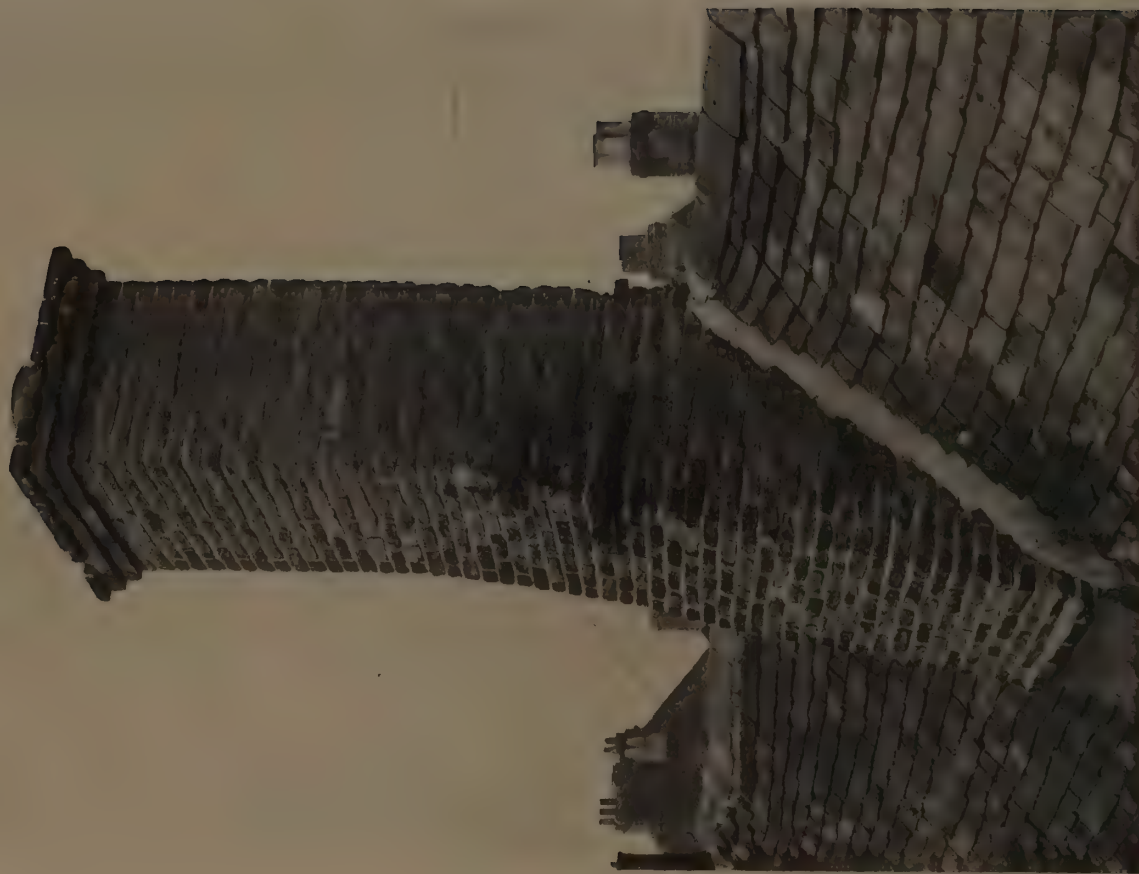
EAVES COURSES AND CORBELS.



KENT. ROLVENDEN. GATE HOUSE.



KENT. BENENDEN. CURTIS GREEN FARM.



RYE. 102, HIGH STREET. Built of small "Dutch" bricks $7\frac{1}{4} \times 3\frac{3}{8} \times 1\frac{1}{8}$.
four courses rise 8 ins. Pink colour.



SUSSEX. BURWASH. BATEMANS. d. 1634.



SUSSEX. SALEHURST. BEECH HOUSE.



ST. ALBANS.
TYTTENHANGER. c. 1654.



SUSSEX. BURWASH.
RAMPYNDENE. d. 1699.

CHIMNEYS. Square sections.



KENT. MARDEN. CHURCH FARM.



KENT. SISSINGHURST. KINGS HEAD INN.

EXTERNAL CHIMNEYS, late 16th or early 17th Century.



SISSINGHURST.
Corbelling of chimney



KENT. SISSINGHURST CASTLE. c. 1535.



KENT. SANDHURST.



KENT. WYE. CRUNDALE.



SUSSEX. NORTHIAM. DOMONS.

OCTAGONAL CHIMNEYS.

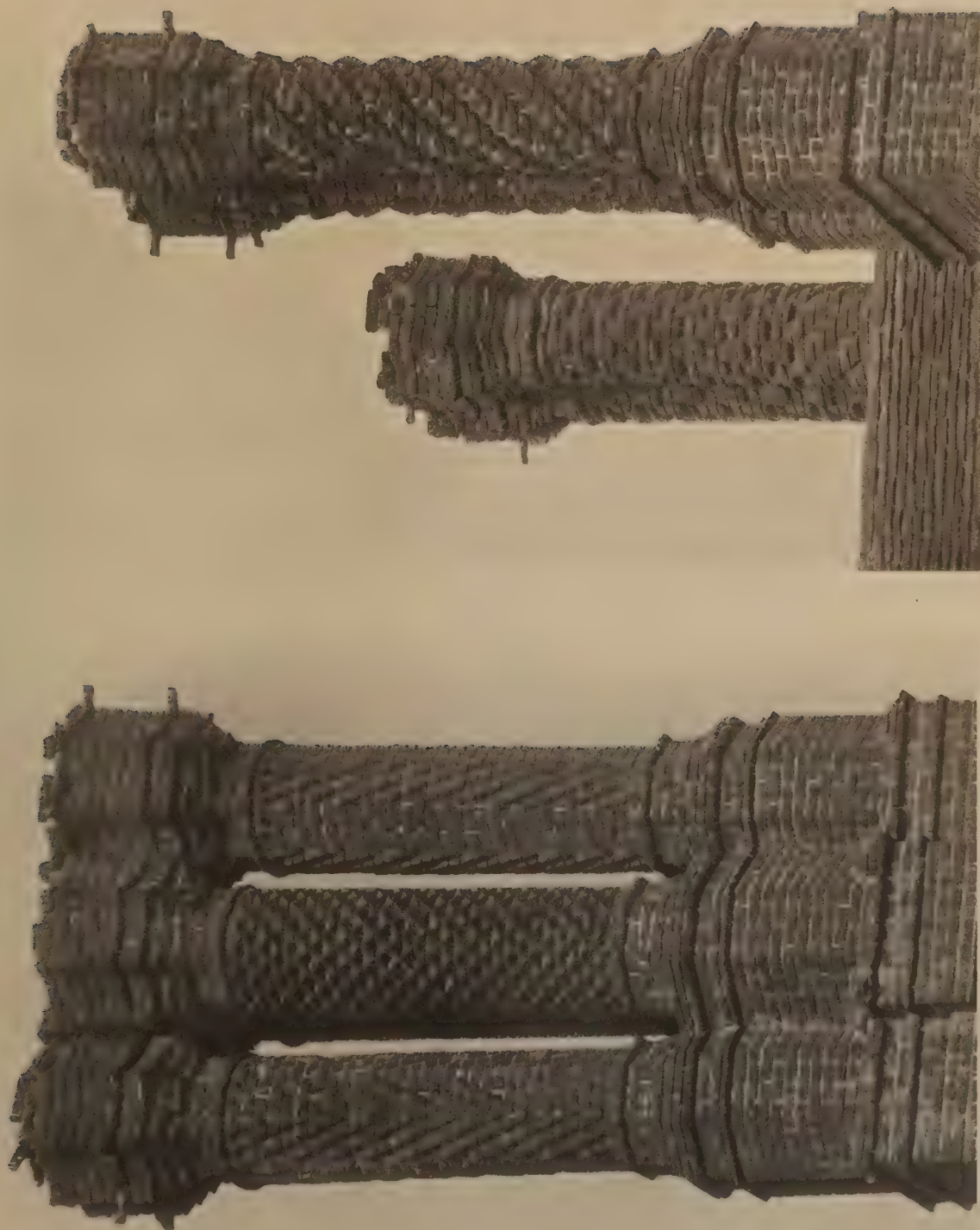


SUFFOLK. STUTTON HALL. c. 1520. Cut brick work. Modern caps.

OCTAGONAL CHIMNEYS.



WHEATHAMPSTEAD. MACKERYE END. d. 1665.

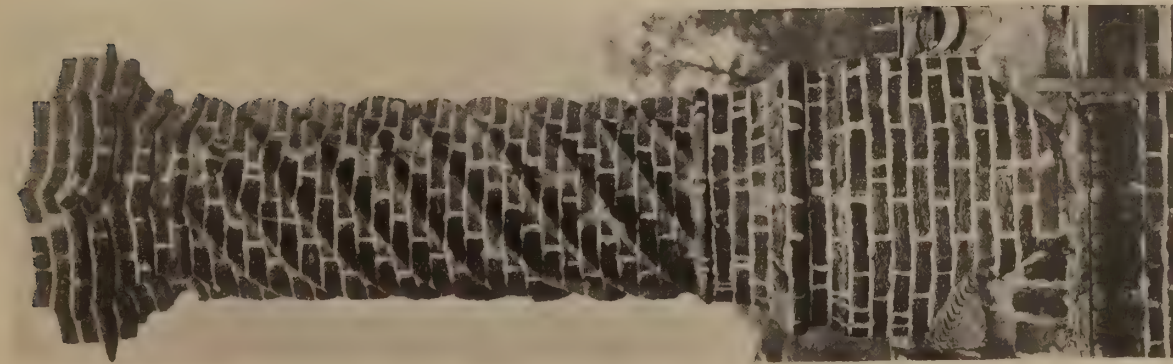


Photos by courtesy of V. A. Malcolmson, Esquire.

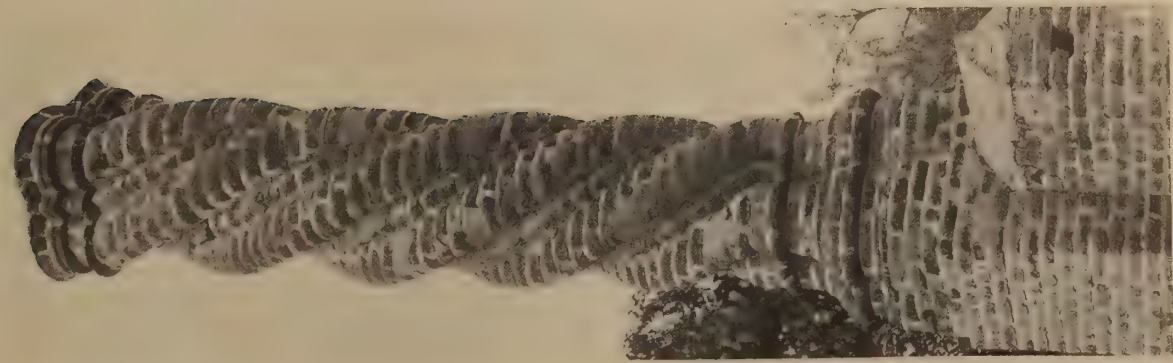
HERTS. STEVENAGE. ASTON BURY. Octagonal cut and moulded brick chimneys, c. 1545, shewing detail of caps, &c., before restoration. The joining of the spike courses is instructive.



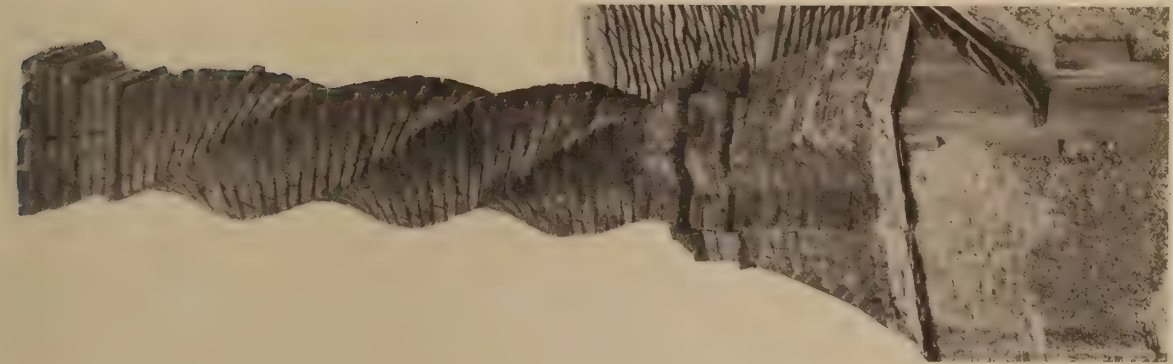
HAMPTON COURT PALACE. c. 1520. Chimneys built of purpose-moulded bricks, shewing corbelling out from wall.



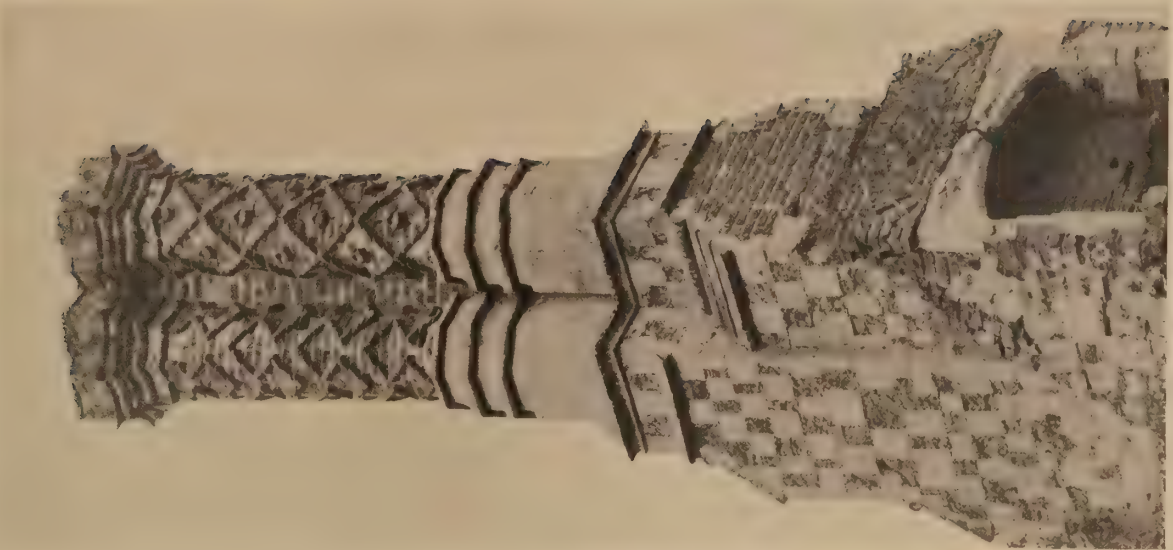
ESSEX. LAYER MARNEY TOWERS
or HALL.



HERTS. RYE HOUSE.



BUCKINGHAM.
SPIRAL CHIMNEYS. Early 16th Century.



ESSEX. ST. OSYTH'S PRIORY.



LITTLE LEEZ or LEIGHS PRIORY. c. 1536.

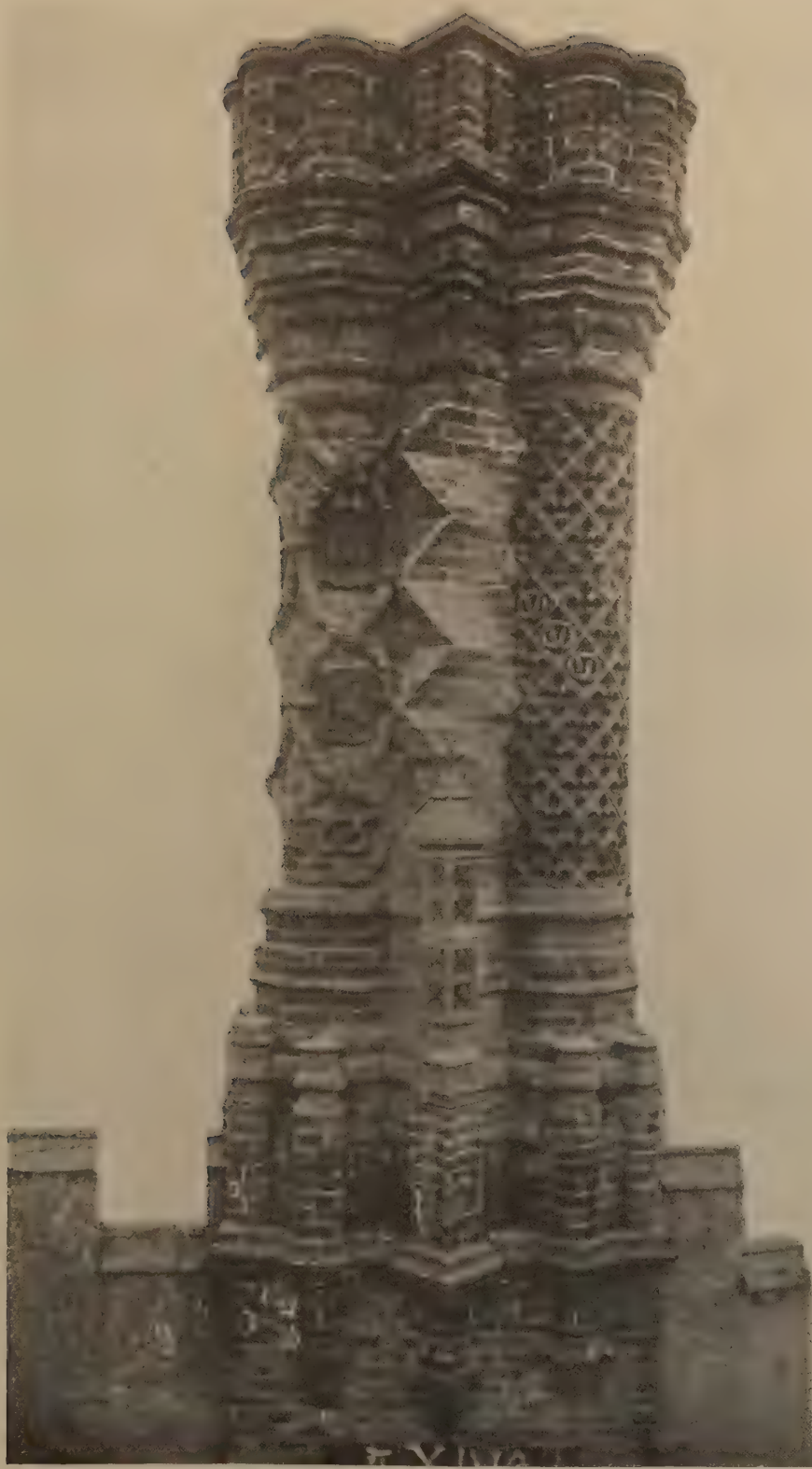


Photo by courtesy of Algar H. S. Howard, Esquire, Windsor Herald.

GLOS. THORNBURY CASTLE. d. 1514. Probably the finest chimney of cut and moulded brick.



EAST BARSHAM MANOR HOUSE. c. 1525. The original caps have been destroyed.



GREAT SNORING RECTORY. Early 16th century. String course with brick tablets moulded in the Italian manner.



EAST BARSHAM MANOR HOUSE. c. 1525. String of cut brick cusped panels and moulded brick tablets.



EAST BARSHAM MANOR HOUSE. c. 1525. String of tower; hexagonal panels of cut brick containing moulded brick tablet portraits. The Stapleton lion and the Wode saltire between four staples.



ESSEX. LAYER MARNEY TOWERS or HALL. c. 1520. Terra-cotta parapet.



NORFOLK. GREAT CRESSINGHAM PRIORY. c. 1545. Detail of terra-cotta turrets and panels.



GUILDFORD. SUTTON PLACE. c. 1523-7. Detail of terra-cotta blocks of which turrets are built. Detail of mouldings and arabesque ornament of terra-cotta window dressings. R.W., initials of Sir Richard Weston with his rebus, a tun.



HAMPTON COURT PALACE. c. 1520. Terra-cotta plaques of Roman Emperors and terra-cotta tablet of Wolsey's arms by the Italian Giovanni da Majano.



ESSEX. LAYER MARNEY CHURCH. Terra-cotta tomb of Henry Lord Marney, 1524, with black marble recumbent effigy. N. elevation. Pale pink terra-cotta, whitewashed.



LAYER MARNEY CHURCH. S. elevation of terra-cotta tomb.



LAYER MARNEY CHURCH. Detail of terra-cotta tomb. The semi-circular pediments with dolphin crestings are refined copies of the Laver Marney Towers parapet copings, and are repeated on the Oxburgh tombs.



NORFOLK. OXBURGH CHURCH. One of the terra-cotta Bedingfeld tombs. c. 1525.



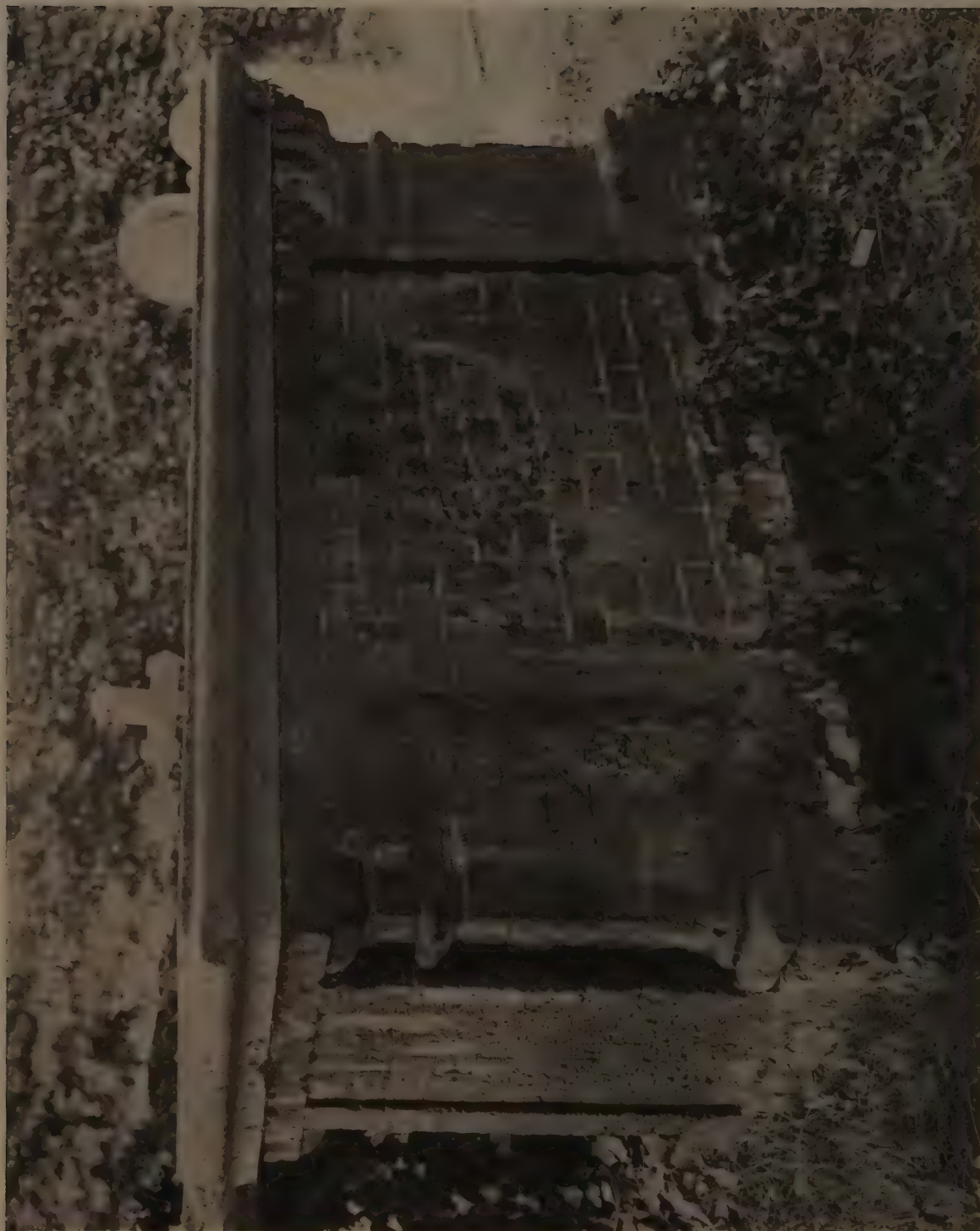
OXBURGH CHURCH. Bedingfeld tomb and entrance doorway to Bedingfeld Chapel. Pink terra-cotta, whitewashed. c. 1525. The pilasters have sunk panels, enriched with ornament. Those of the Marney tomb have split balusters applied.



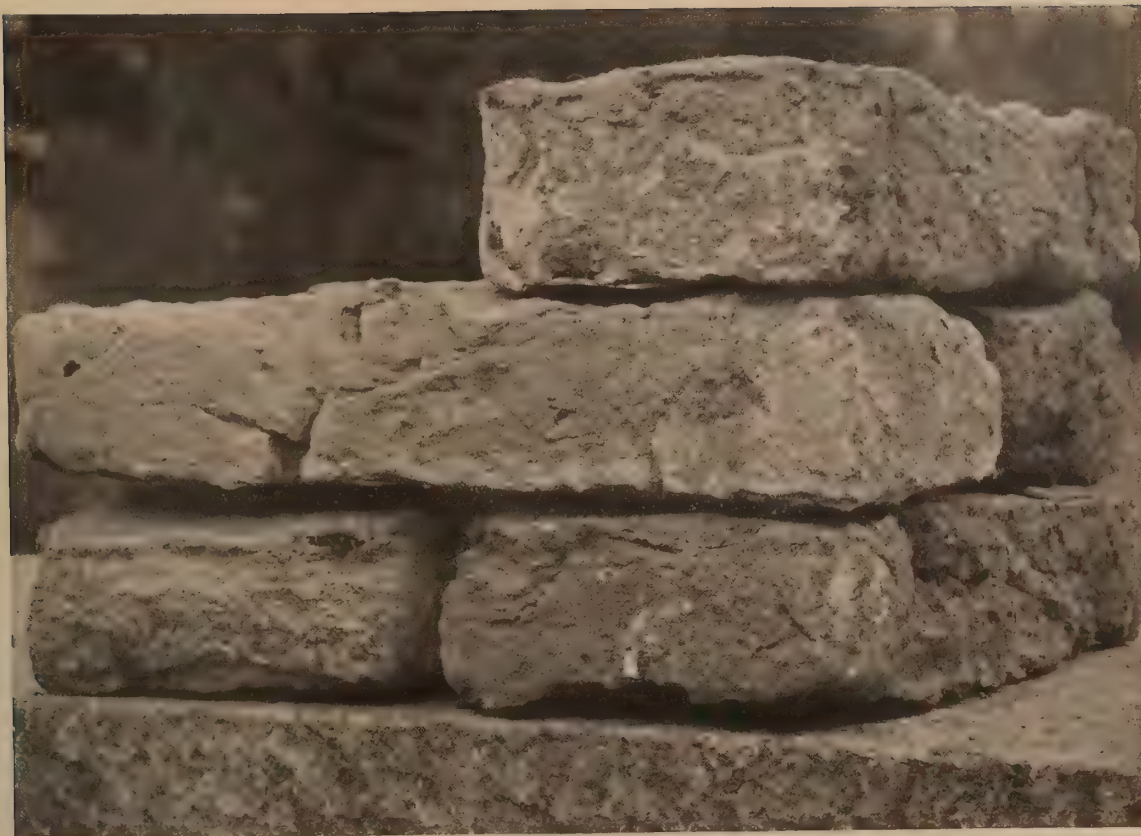
OXBURGH CHURCH. Detail of terra-cotta archway to Bedingfeld Chapel.



NORFOLK. WYMONDHAM CHURCH. Pink terra-cotta Sedilia, whitewashed, by same Italian workmen as the Marney and Bedingfeld tombs. c. 1525.



THANET. ST. PETER'S CHURCHYARD. One of three gauged red brick table tombs with stone slab, d. 1695.



15TH CENTURY BRICKS. Red, about half size, shewing form, texture, &c.



ESSEX. COLCHESTER. Roman wall of roughly faced septaria laced at regular intervals with four courses of bricks. The lowest lacing course goes through the wall which has a core of cement and rubble. Similar methods were adopted in building the Norman castles where Roman bricks were re-used in the same way. A.D. 65. (See p. 101.)



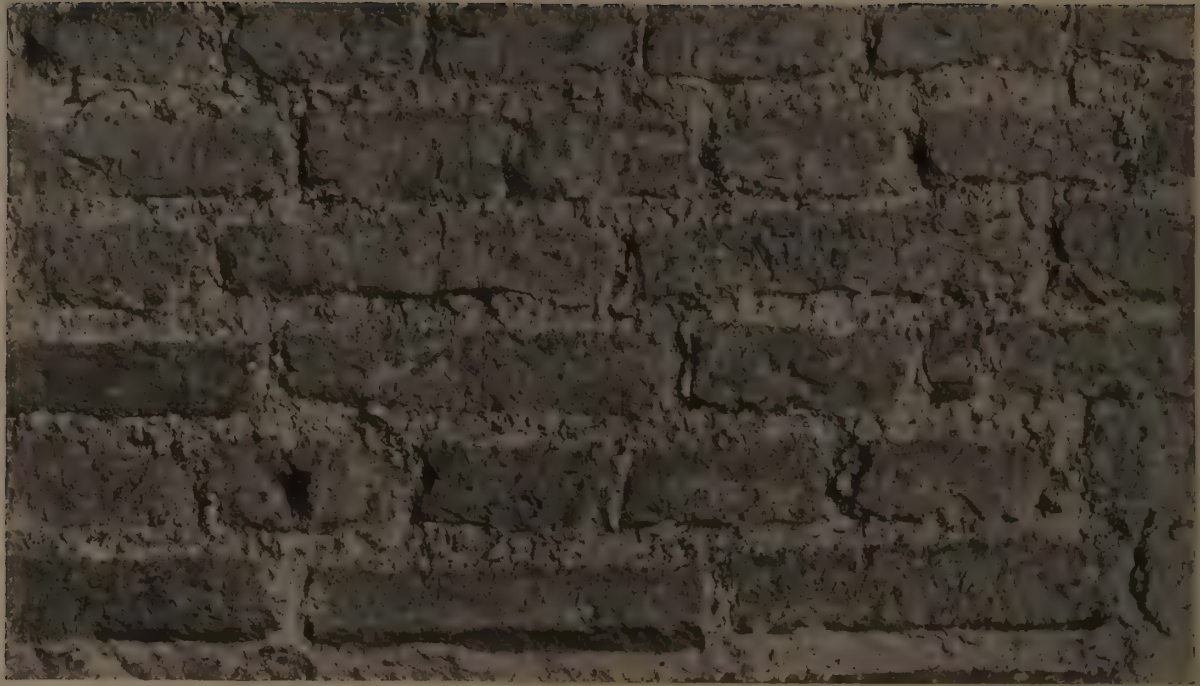
COLCHESTER. TRINITY CHURCH. Detail of angle of Saxon Tower. 11th century. Quoins of Roman bricks from 1 in. to $3\frac{1}{2}$ ins. thick. The brick with benchmark measures $13\frac{1}{2} \times 10 \times 3\frac{1}{8}$ ins.; most are deep red, some light and softer.



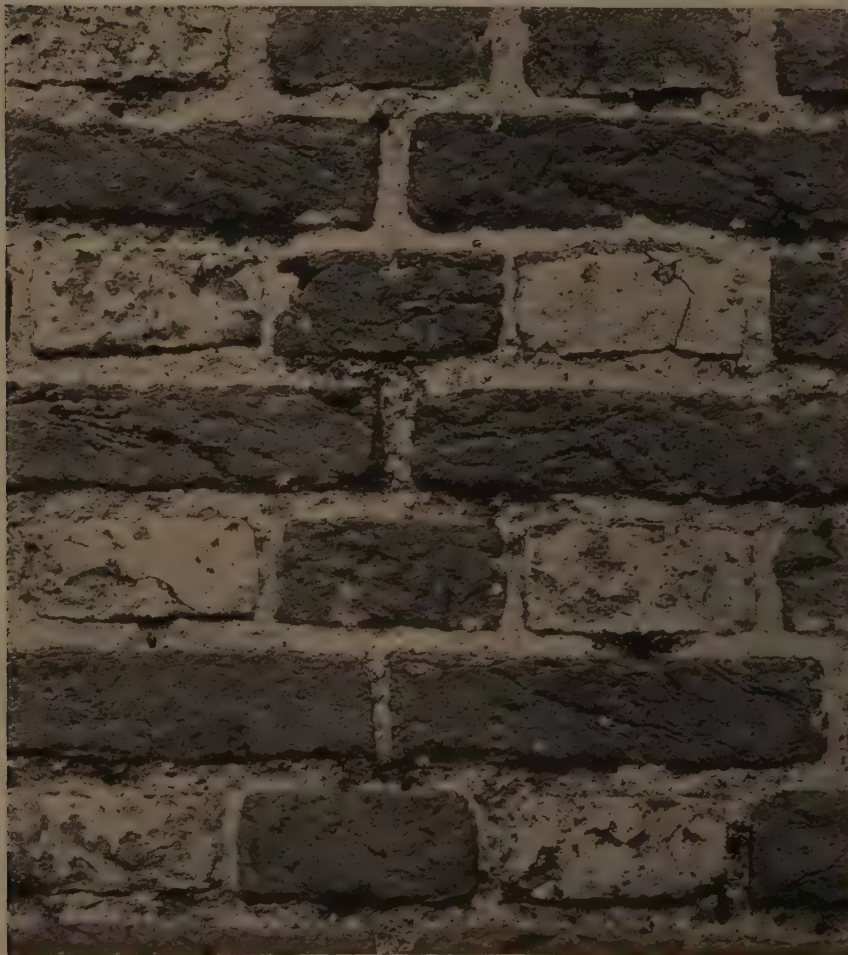
ESSEX. LITTLE COGGESHALL. St. NICHOLAS CHAPEL. Detail of quoin, c. 1220. Colour bright red; sizes, $12 \times 6 \times 1\frac{3}{4}$ ins.; four courses rise 10 ins. These are amongst the earliest mediaeval bricks, before Flemish brick dimensions were adopted here.



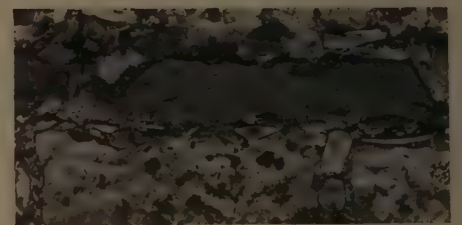
SUFFOLK. LITTLE WENHAM HALL. c. 1260-80. The bricks vary greatly in colour, mostly cream and greenish yellow, occasional pinks, light and deep reds. Texture very rough. Copings of purpose-moulded brick, many original, some 16th century. All bricks well burned, some partially vitrified. Sizes vary as much as colour. Majority in tower (measured from roof and evidently not tampered with for a long time) were $9 \times 4\frac{1}{4} \times 2$ ins., and four courses rose 10 ins. Lengths varied from $8\frac{1}{2}$ to $9\frac{1}{4}$ ins.; width 4 to $4\frac{3}{4}$ ins., and many were $2\frac{1}{4}$ ins. thick. These bricks are early examples of bricks of Flemish character. Above detail is taken a few feet above ground level. The bases of walls are composed of stone, flint and ashlar. The bond is irregular with many heading courses.



OXBURGH HALL. N.E. angle of gatehouse. b. 1482. Bricks, $9 \times 4 \times 2$ ins.; four courses rise $10\frac{3}{8}$ ins. English bond, but still irregular, with many headers in stretching courses. Colour, medium reds.

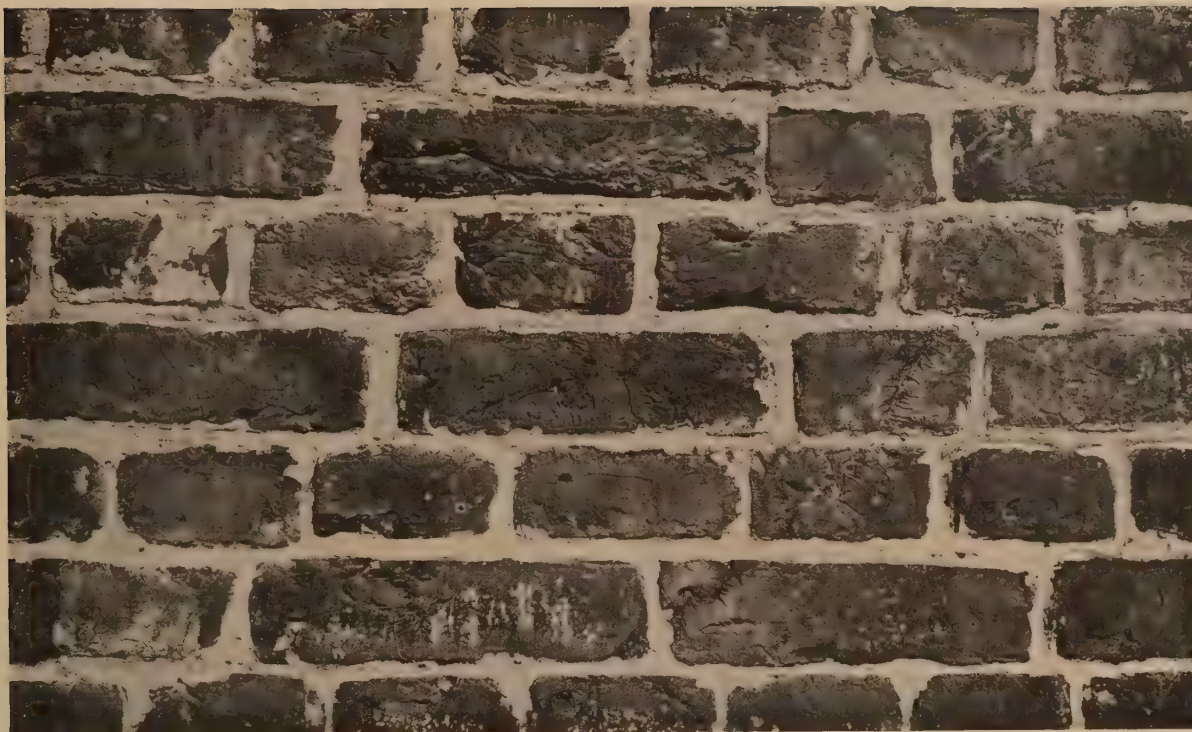


LITTLE LEEZ or LEIGHS PRIORY. c. 1536. $9\frac{3}{4} \times 4\frac{1}{4} \times 2$ ins.—many $2\frac{1}{2}$ ins.—some less than 2 ins.; four courses rise $10\frac{3}{8}$ ins. Colour, medium red, English bond, regular, except where broken for sake of diaper work. The light headers are the vitrified dark bricks which reflect light.

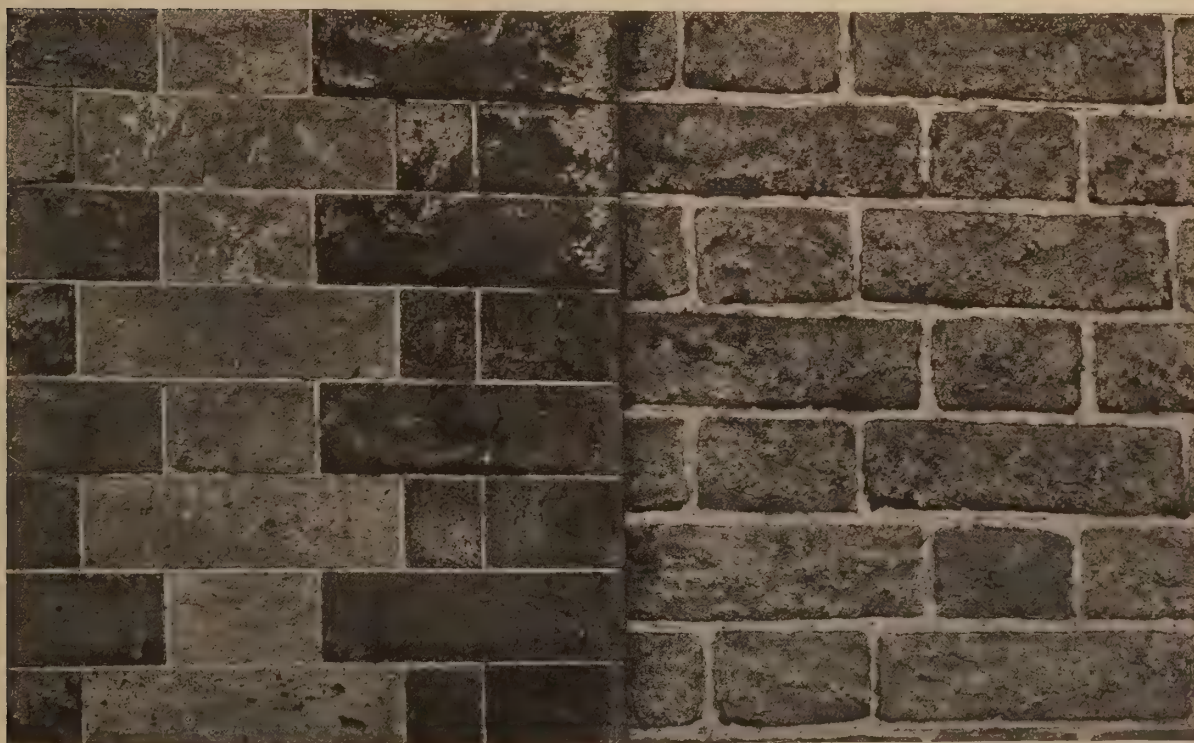


COLCHESTER. MILL AT BOURNE POND. d. 1591.

Joints galletted with chips of flint.



KENT. BROOME PARK. c. 1635. Brickwork under ground floor window, E. front. Bricks red, $8\frac{3}{4}$ (some $9\frac{3}{8}$) \times $4\frac{1}{8}$ \times $2\frac{3}{8}$ (some 2 and $2\frac{1}{2}$) ins.; four courses rise $10\frac{1}{2}$ ins. The joint is still thick, but soon began to be built thinner.



KENT. BRADBOURNE. Dated 1714. Gauged brick pier (in two colours) and plain walling. The bricks are encrusted with greyish green lichen. The walling brick joint is $\frac{3}{8}$ in. thick, and the bricks have become more regular. Flemish bond.

(a)



(c)

(b)

DIAPER DETAILS.

- (a) KENT. SARRE. d. 1691. Diaper date in knapped flint headers in brick gable wall.
(b) SISSINGHURST CASTLE. c. 1535. Soft blue grey headers forming trellis pattern, which varies in intensity and dies away in places.
(c) THANET. GABLE AT ST. PETERS. 17th century. Diaper of knapped flint headers in brick wall. The flints vary from pale grey to black.



HANTS. ST. CROSS HOSPITAL. c. 1503. Chequer work of stone, flints and bricks.



Photo by courtesy of Lt.-Col. J. H. Cooke.

ROUEN. BOOS MANOR. DOVECOTE. 15th century. For details, see p. 439.
FOREIGN EXAMPLE.



Photo by courtesy of C. Johansson, architect.

STOCKHOLM. MODERN BUILDING built in Monk Bond (two stretches and one header in the same course), shewing zig-zag pattern produced. This bond is largely used in mediaeval German and Swedish work.

FOREIGN EXAMPLE.



SUSSEX. BARNHAM COURT. c. 1645. Cut and purpose-moulded bricks.



KENT. WEST FARLEIGH HALL. c. 1724. Gated, cut and rubbed bricks.



WEST FARLEIGH HALL. Section of cornice showing bond and tailing.

CORNICE DETAILS.



SUSSEX. BECKLEY. CHURCH HOUSE. d. 1744. Detail of pilaster cap and cornice.
A typical country builder's job in cut and rubbed brick.



Kew Palace. d. 1631.
Corinthian columns
and window with
gauged and carved
brick capitals and
key block.



Detail of capital.
Shaft of bricks on end.

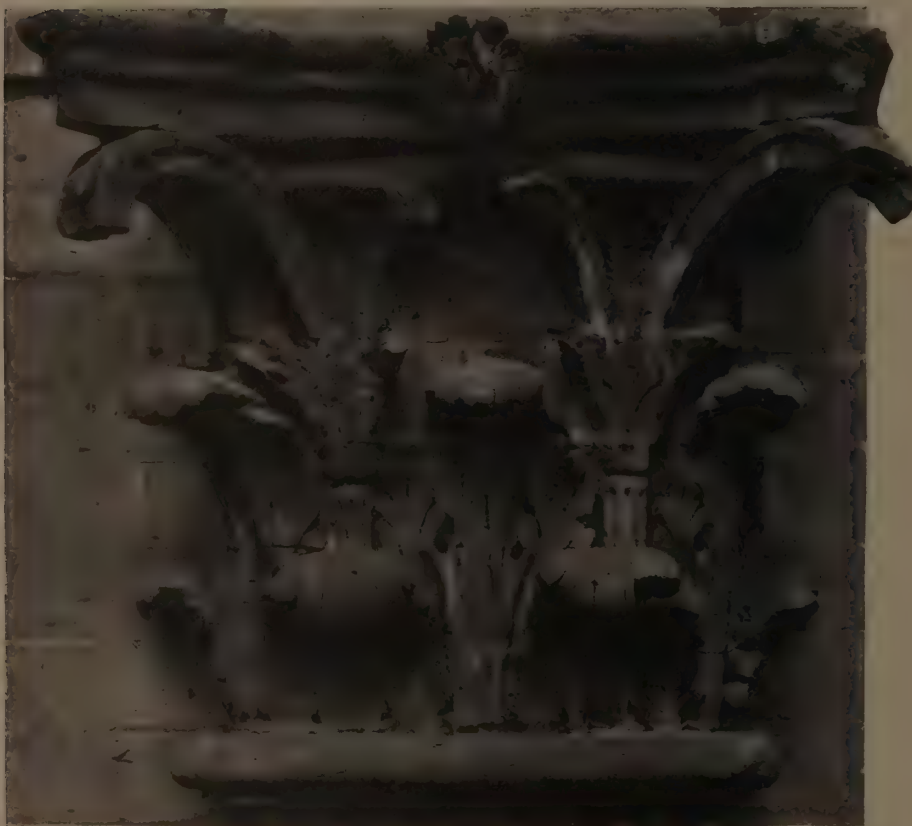
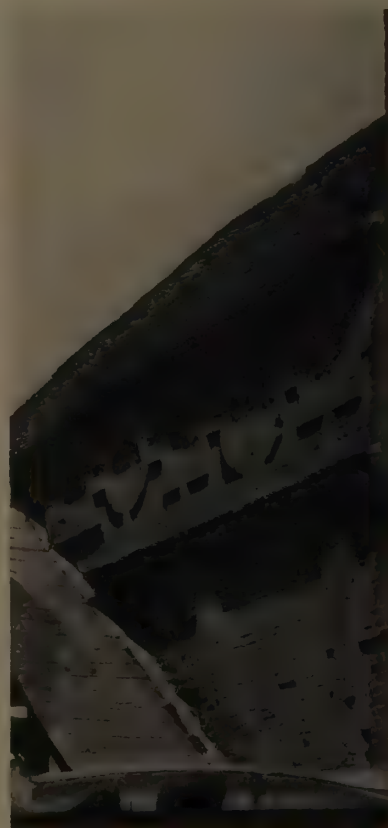


Photo by permission of Director and Secretary of the V. and A. Museum.
Gauged and carved brick Corinthian capital from a house at ENFIELD,
now in Victoria and Albert Museum. Late 17th century. See p. 304.



FARNHAM. OLD TOWN HALL.
c. 1670. Strapwork.



COLCHESTER. ST. BOTOLPH'S PRIORY CHURCH. 12th century. Newel stair of Roman bricks.



NORFOLK. OXBURGH HALL. b. 1482. Cut brick stairs with moulded brick handrail.
Probably by the same workmen as that at Faulkbourne Hall.



ESSEX. FAULKBOURNE HALL. Before 1494. Brick Newel stair with moulded brick handrail.



SUSSEX. LAUGHTON PLACE. d 1534. Newel stair.



Photo H. Carlton, Horncastle.

LINCS. TATTERSHALL CASTLE. 1431-49. Ribbed vaulting of moulded brick over 2nd floor corridor.



Photo H. Carlton, Horncastle.

LINCS. TATTERSHALL CASTLE. c. 1431-1449. Moulded brick-ribbed vaulting over 3rd floor lobby.

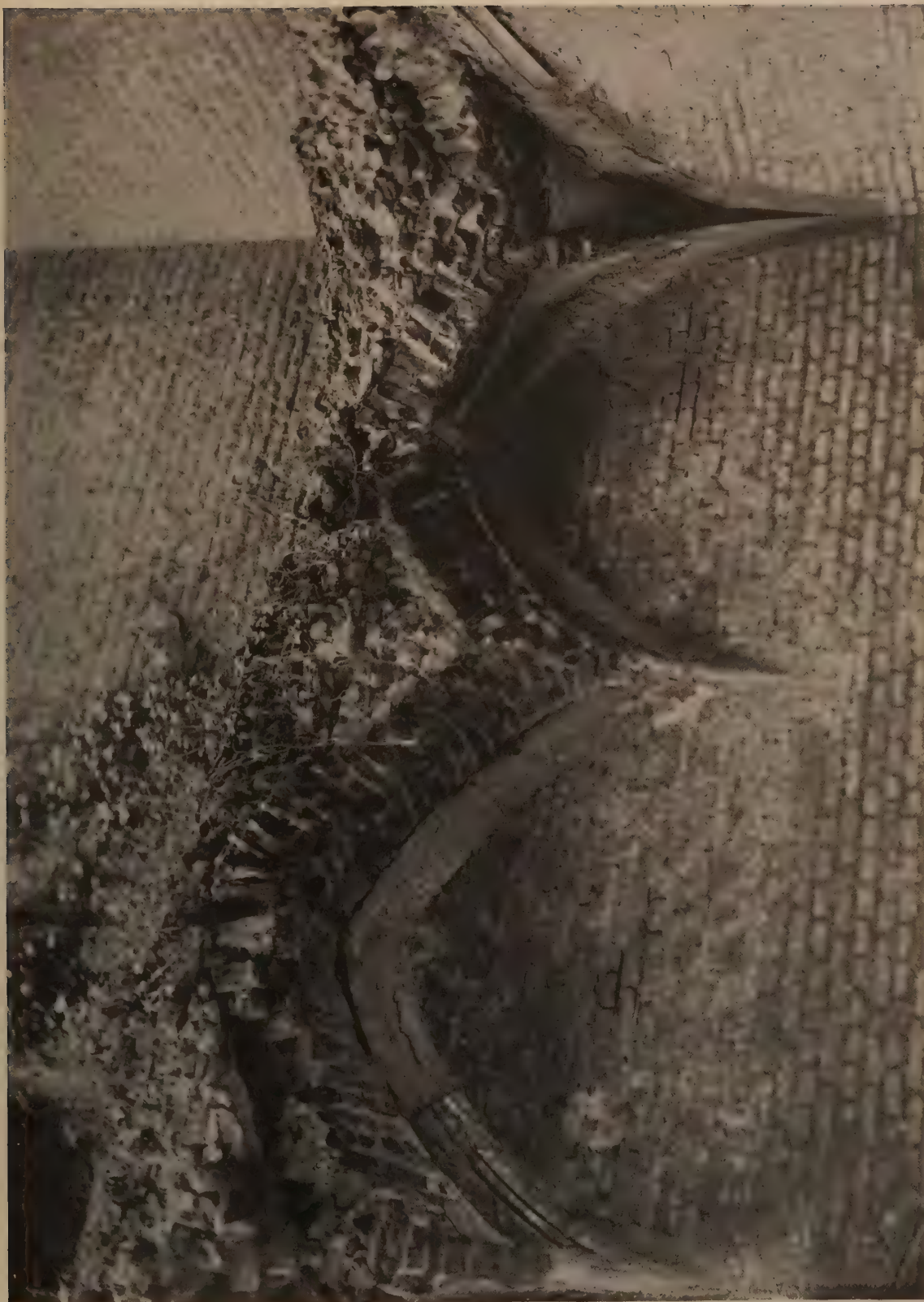
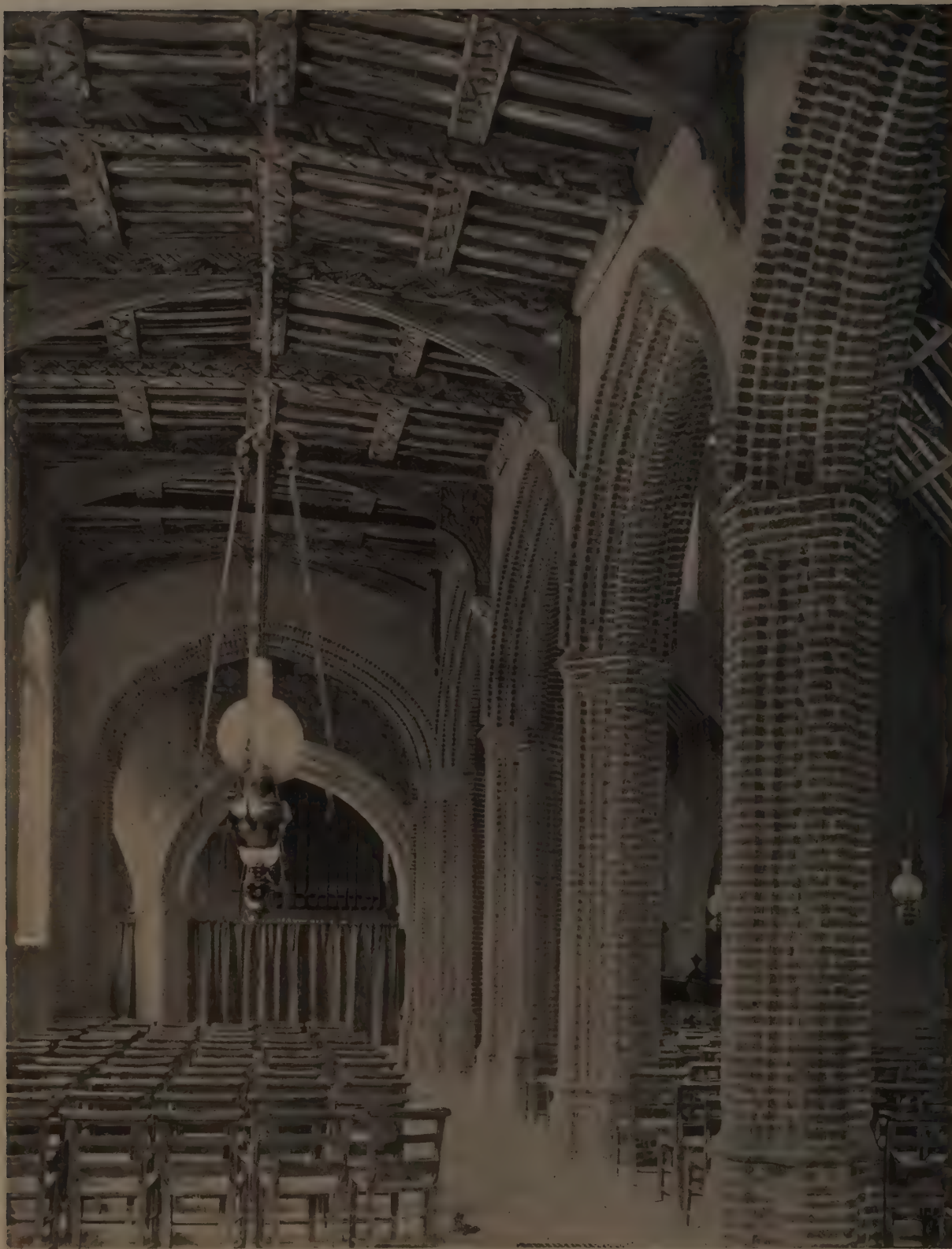


Photo by courtesy of J. E. Ray, Esquire, taken 1909.

HERSTMONCEAUX CASTLE. 1445-6. Ruined groining before restoration, shewing sections. The ribs are of moulded bricks, rendered with mortar.



ESSEX. ST. OSYTH'S CHURCH. Brick arcading. Late 15th century.



ESSEX. CHIGNAL SMEALEY. ST. NICHOLAS CHURCH. Early 16th century. Tower arch, nave arcading and font of brick.



SUFFOLK. WEST STOW HALL. Passage from gatehouse. Brick arcading, plastered.



KENT. WYE COLLEGE. Brick cloisters. 18th century. A dignified result, produced by simple, unmoulded brick units.



ESSEX. EARLS COLNE. CHAPEL VIADUCT. Built 1847. Well-proportioned arches and piers recalling the picturesque Roman aqueducts.
MODERN EXAMPLE.



ESSEX. BRADWELL-JUXTA-COGGESHALL. HOLY TRINITY CHURCH. Stone font on brick base.
Early 16th century brickwork.



NORFOLK. POTTER HEIGHAM CHURCH. 15th century. Brick font. Modern flooring tiles have been used for recent repairs.



KENT. MARGATE. SALMESTONE GRANGE. 15th century brick fireplace. Pink and putty coloured bricks, $8\frac{1}{2} \times 4 \times 2\frac{1}{4}$; four courses rise 12 ins.



NORFOLK. OXBURGH HALL. b. 1482. Brick fireplace in King's Chamber. Pinky-red bricks, chamfered arch and jambs, moulded and stopped.

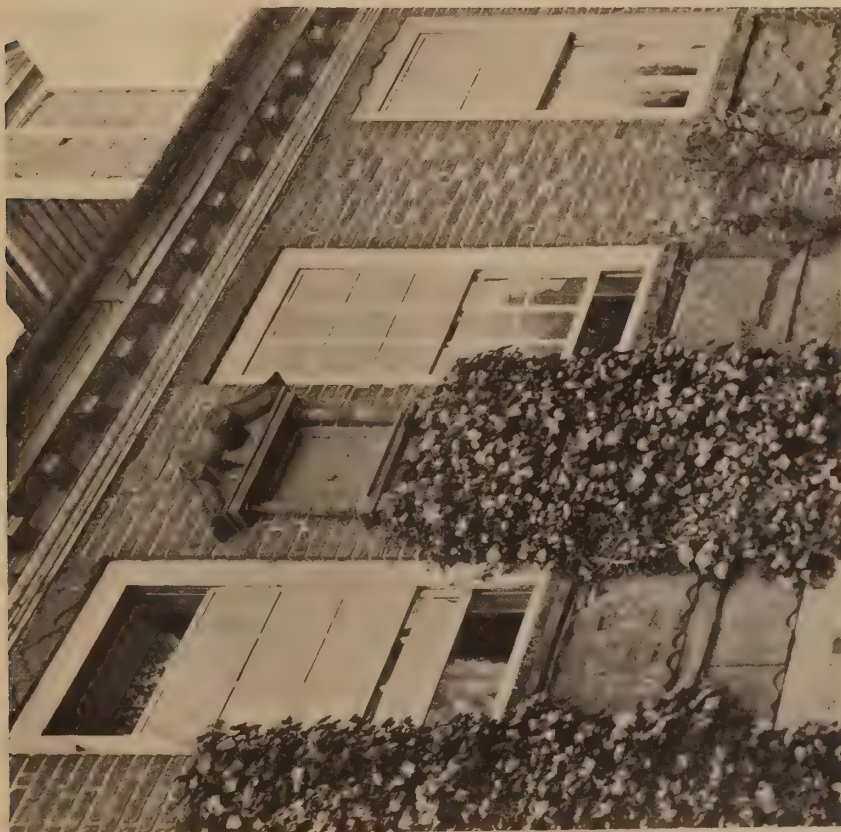


Photo by permission of the Director and Secretary of the V. and A. Museum.

ESSEX. PRITTLEWELL. Now in Victoria and Albert Museum. Late 15th century. Crenelated brick mantel (over stone fire-arch), with panels of brick tracery and painting on plaster. The unit brick of one cusp has been used for trefoils and cinquefoils.



SUFFOLK. GIFFORD'S HALL. Detail of door moulding and label terminal.



KENT. HOUSE AT YALDING. Gauged, cut and rubbed brick tablet.
Gauged, cut and rubbed brick window arches and aprons.



SUFFOLK. WEST STOW HALL. c. 1520-33. Detail of pinnacles to gateway turrets. The finials are of terra-cotta.

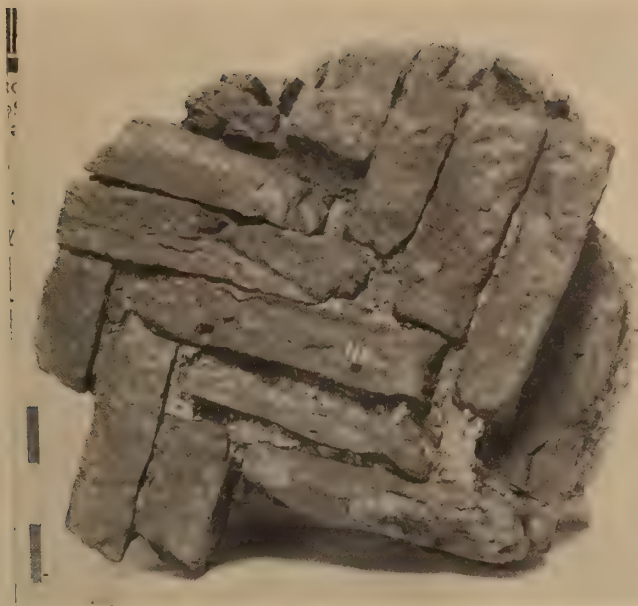
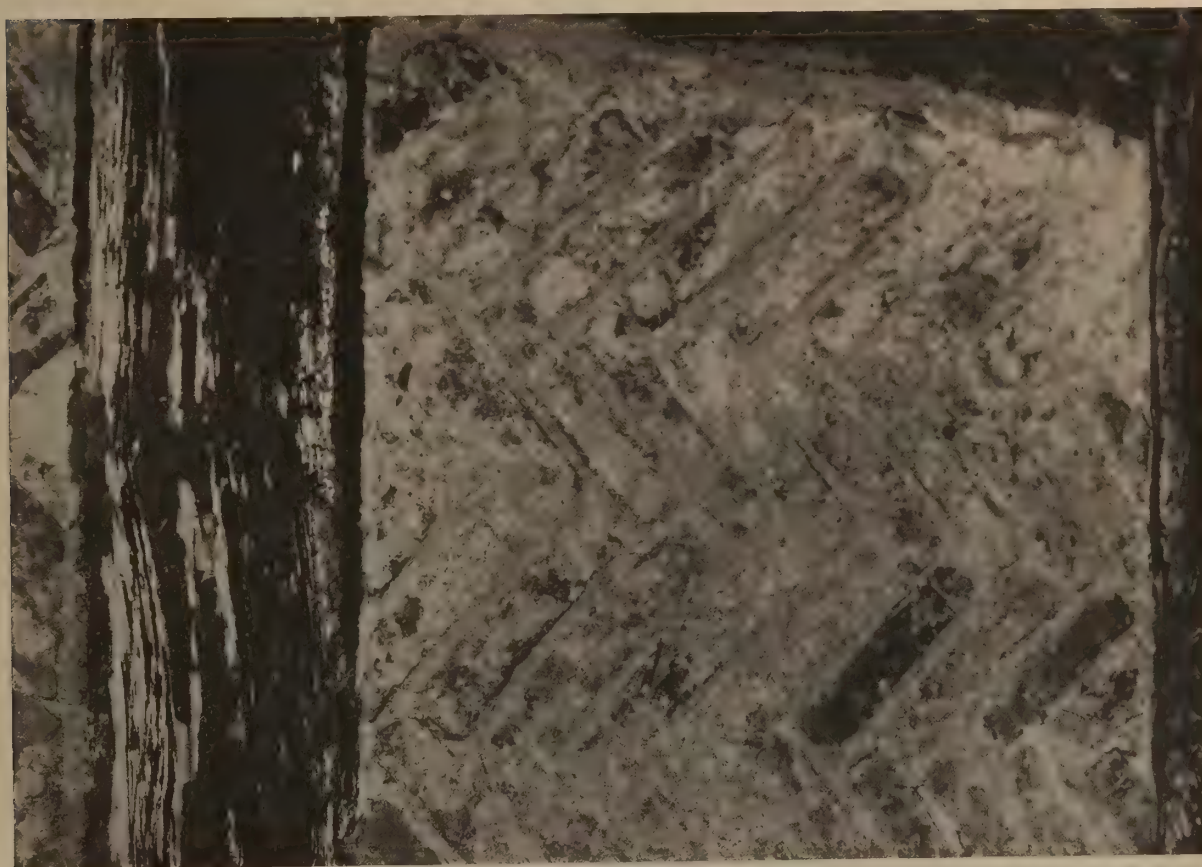


Photo by courtesy of A. G. Wright, Esquire, Museum, Colchester.

Herringbone brick on edge paving from Forum, Colchester. Sizes, $5 \times 2\frac{1}{2} \times 1$ to $1\frac{1}{4}$ ins. Red.



ST. ALBANS CATHEDRAL. Triforium arcade, 11th century, of Roman bricks re-used on Saxon balusters from an earlier building. Herringbone inlay of tympana in brick.



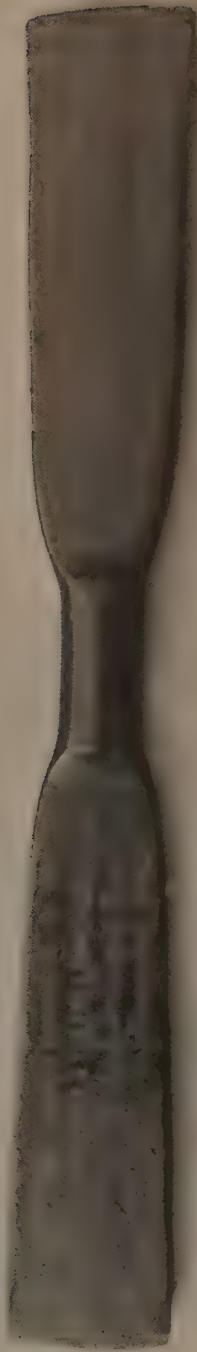
Brick Nogging to timber framing, originally rendered with plaster and coloured, from Cottage at Tichborne, Hants.



SALISBURY. No. 56, THE CLOSE. 15th century. Herringbone walling in plain tiles, which was rendered with plaster until a few years ago. *Inset*—Enlarged detail of same. Such herringbone work is often found as linings to open fireplaces.



MARGATE. SALMESTONE GRANGE. Coping of plain tiles on 13th century gable wall. For side elevation, see p. 106.



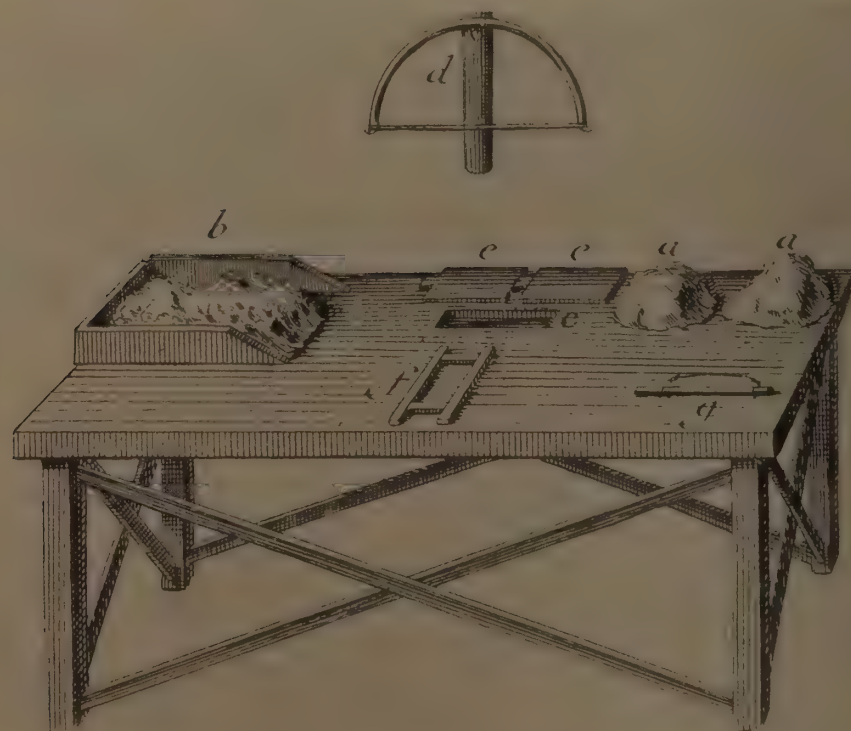
1. Brick cleaning axe as used until recently for cleaning mortar off old bricks. Size, 12×5 ins.; weight, 2 lbs. 14 ozs.
2. Old Brick axe, the property of Tylers' and Bricklayers' Company. This was the tool used up to about 1840 for cutting mouldings, &c., on bricks. The scotch has superseded it. Size, $25\frac{1}{2} \times 3$ ins.; weight, $6\frac{1}{4}$ lbs.

men die teghele of macten. En
dattie teghele te vaster wese



souden. En hier om so mostet

Illustration purporting to represent the Jews making bricks in Egypt, but actually shewing brickmaking in the Netherlands, c. 1425, see p. 29. From *Nederlandische Bijbel*, Utrecht.



Moulding stool and implements as used in Northern France (Maubeuge, Havre, &c.), c. 1761. There is no "stock," otherwise it is very like a modern outfit. For description of contemporary moulding, see p. 30.

Laterarius. Der Ziegler.

TEstā q̄ in domibus nusq̄ bene firma vacillāt,
Tuta quod à pluuijs imbris esse solent.
Siue domo paries fiat communis in vlla,
Seu validos nūres ædificare voles.



Omnia fornaci laterarius adsero nostræ,
Cum facili lateres prouidus arte coquo.
Mepetat, et lapides sibi deferat ocys emptor,
Alta domus ventu cuius aperta patet.
Agriopes gnatum Cinyram tam nobili artū,
Longa repertorem jama fuisse probat.

M Figu-

[Translation.]

"LATERARIUS—THE BRICKMAKER."

Roofs on houses, when firmly wrought, nowhere totter; ever they stand, safe from rainy showers, whether a common party wall be a-building in a house or whether you raise sturdy outside walls. All things I lay to my kiln, I, the Brick-maker, and prudently and with ease and skill I cook my bricks.

Let him come to me and lay aside the stones he has too hastily bought, whose lofty house lies open to the winds.

The ancient legend proves that Cinyra, son of Agriops, was the discoverer of this most noble art. c. 1568. See also p. 29.

From "ΠΑΝΟΠΛΙΑ," by Hartmannus Schopperus, pub. Frankfurt, 1568.



Brickmaking in Northern France, c. 1761. (See p. 30.) From "Descriptions des Arts et Metiers," par Messieurs de l'Academie Royale des Sciences, Vol. XXIV., Plate VI.



Tools.—1, Bevel. 2, 3, 4, 5, Scutch blades. 6, Rasp. 7, Compasses. 8, Club hammer. 9, Bolster. 10, Scutch or Scutch with blade wedged in. 11, Bricklayer's hammer.

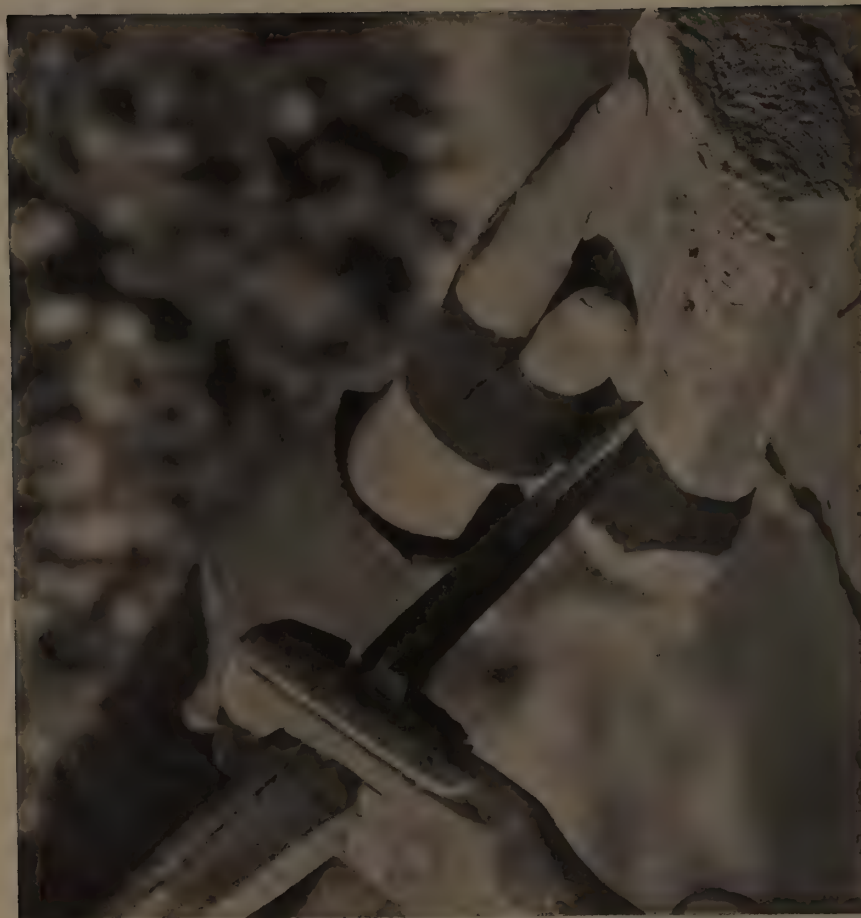
Marking outline with template. See p. 74.

HARD BRICK CUTTING. MODERN TOOLS AND METHOD OF CUTTING MOULDINGS.



Cutting chamfer preparatory to forming semi-circular moulding.

HARD BRICK CUTTING.



Completing the internal angle.



Getting round a stone.



Finishing with rasp.

HARD BRICK CUTTING.



HARD BRICK CUTTING. Two completed bricks. The moulding of one has been stopped to form a square at the external angle.

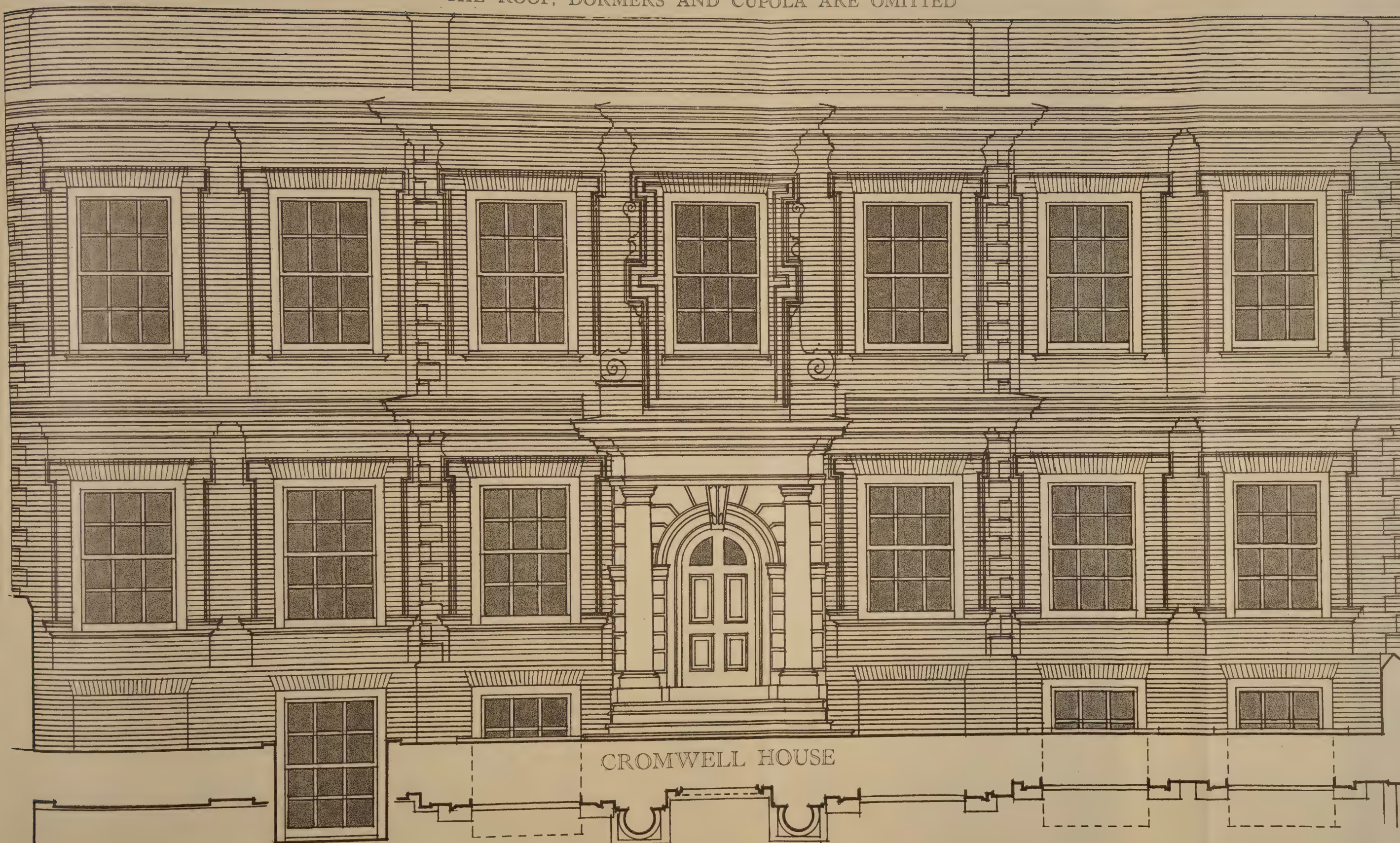


Photos by courtesy of The Sheffield Daily Telegraph.

Chris. Hull laying 809 bricks in one hour at Treeton, near Sheffield, on November 24th, 1924. (See p. 26.)

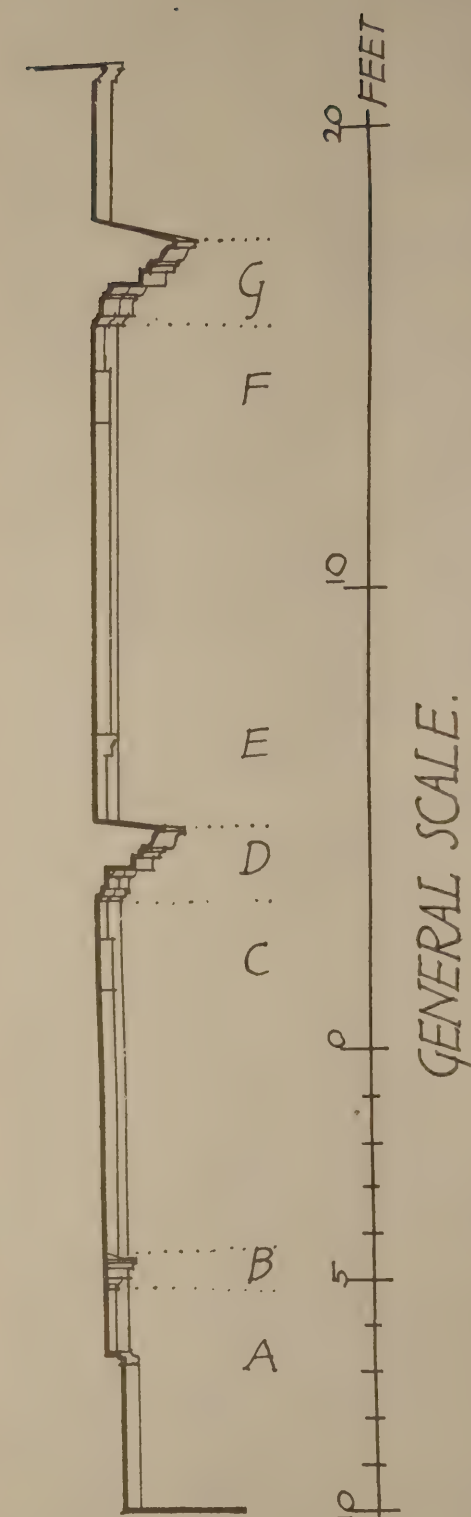
MODERN EXAMPLE.

THE ROOF, DORMERS AND CUPOLA ARE OMITTED

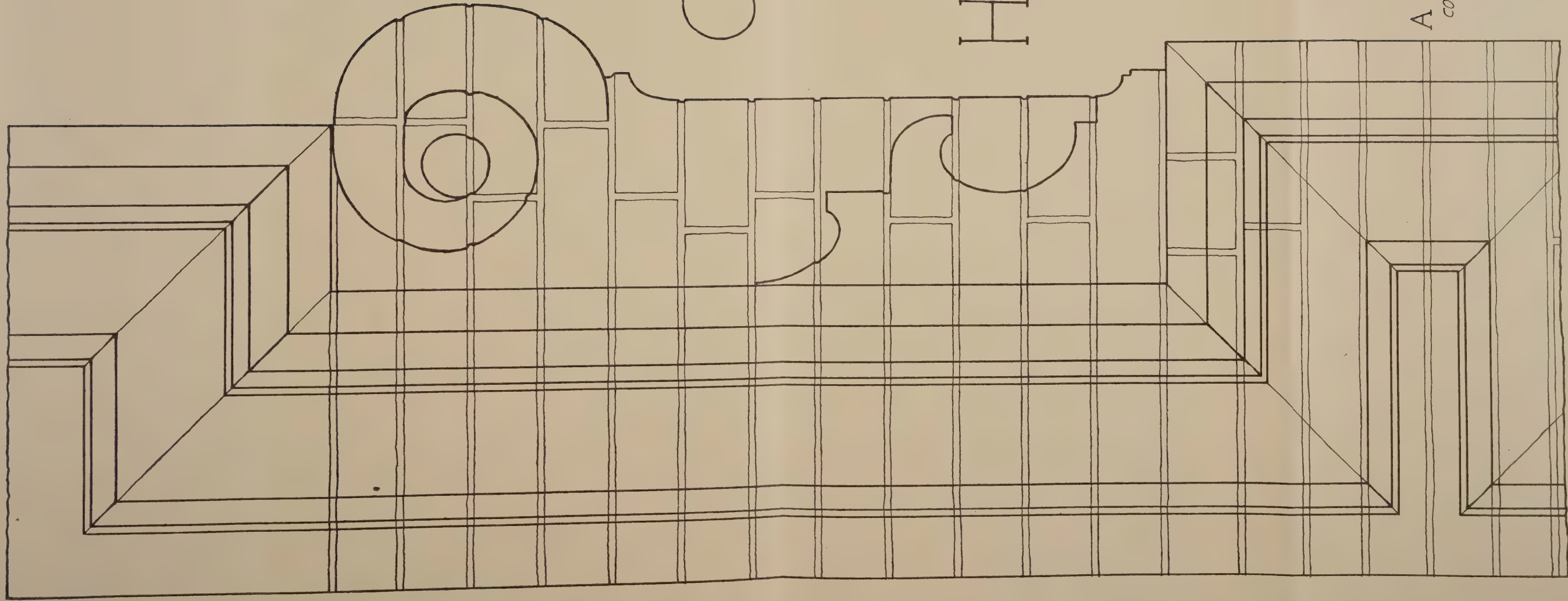


PLAN THRO' WINDOWS.

L. KEIR HETT, F.R.I.B.A. MENS. ET DELT



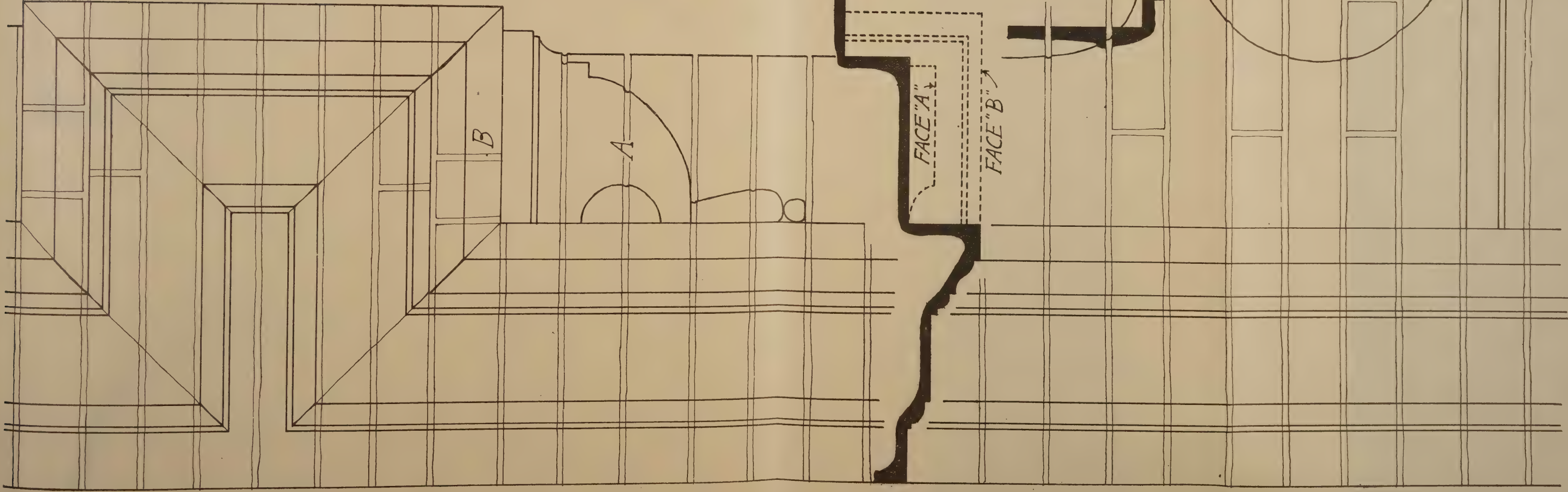
SECTION.



CROMWELL
HOUSE,
HIGHGATE.

A
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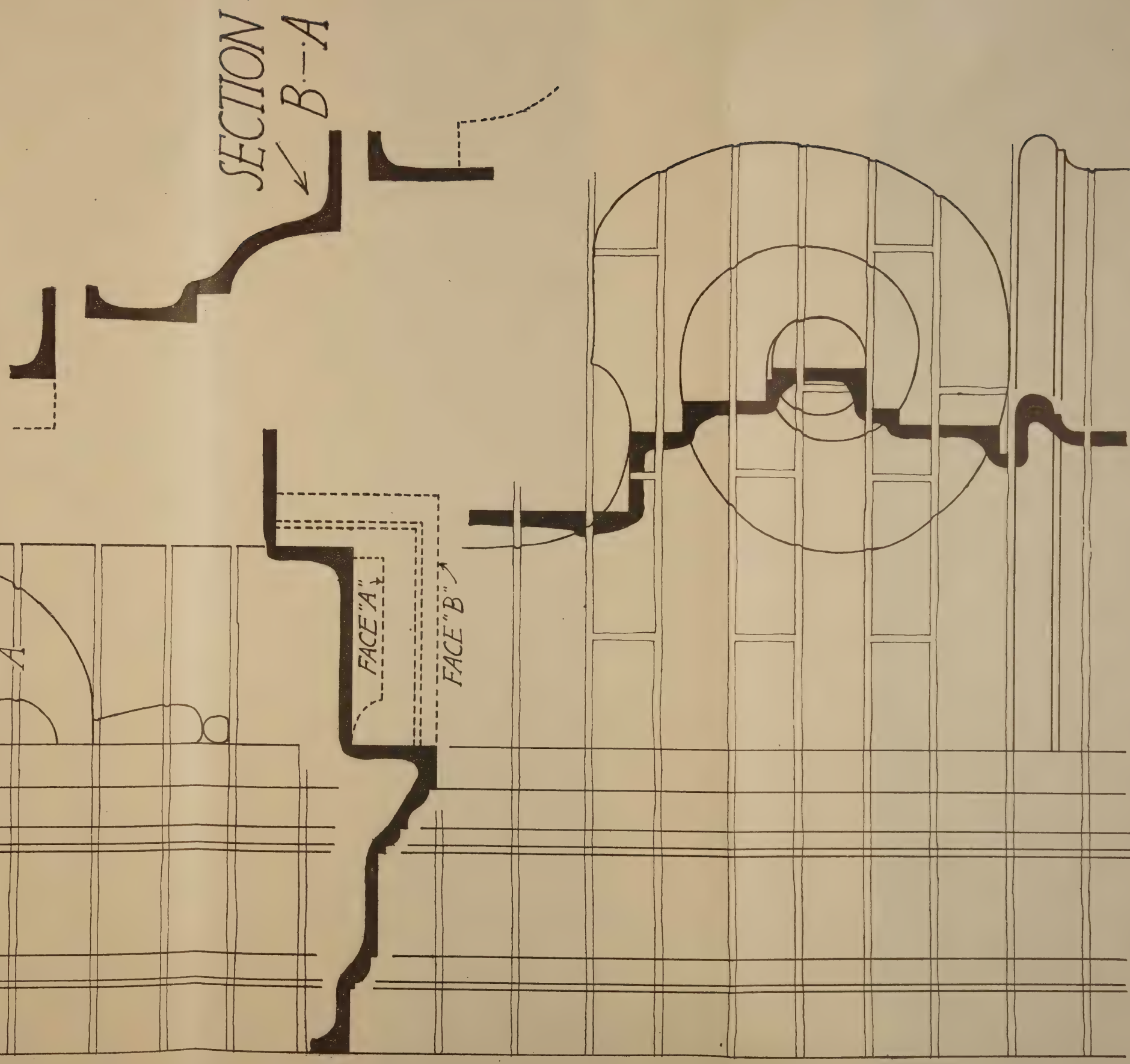
ARCHITRAVE. CENTRAL 1ST FL. WINDOW.
QUARTER FULL SIZE



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PREVIOUS PAGE

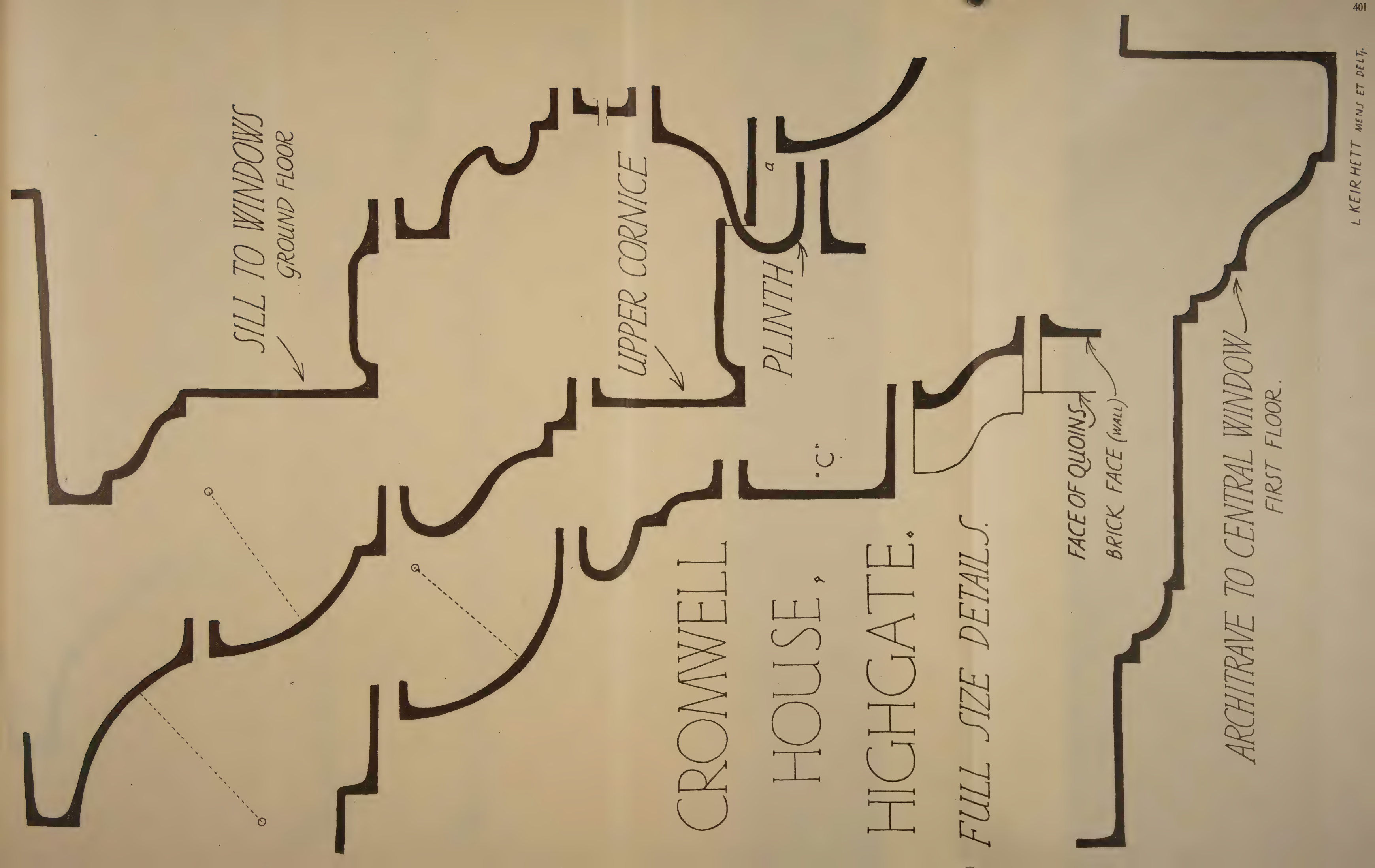
A

CROMWELL HOUSE, HIGHGATE.



ARCHITRAVE. CENTRAL 1ST FL WINDOW.

QUARTER FULL SIZE



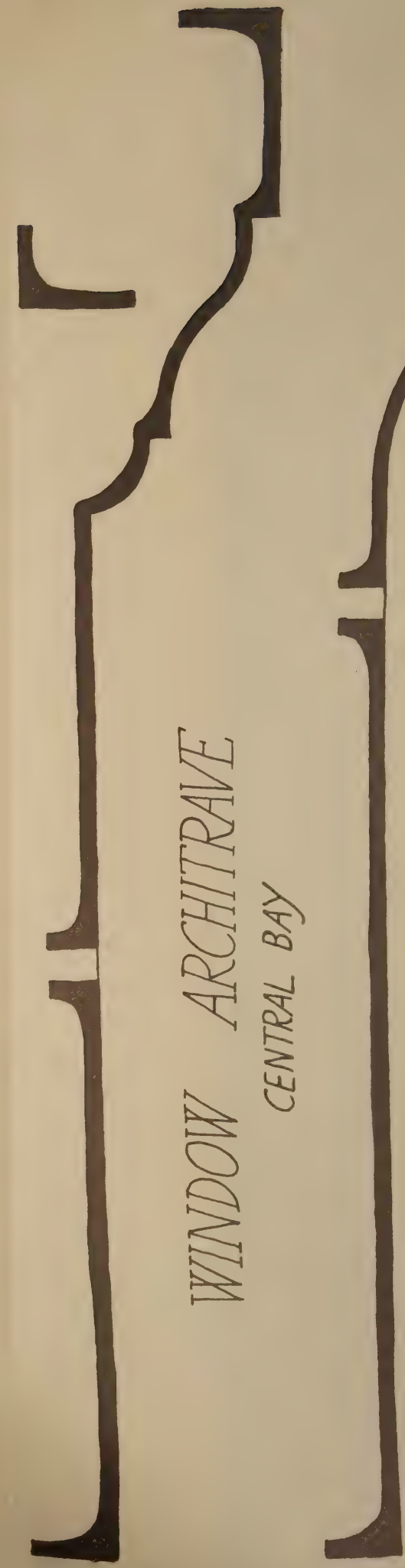


LOWER CORNICE

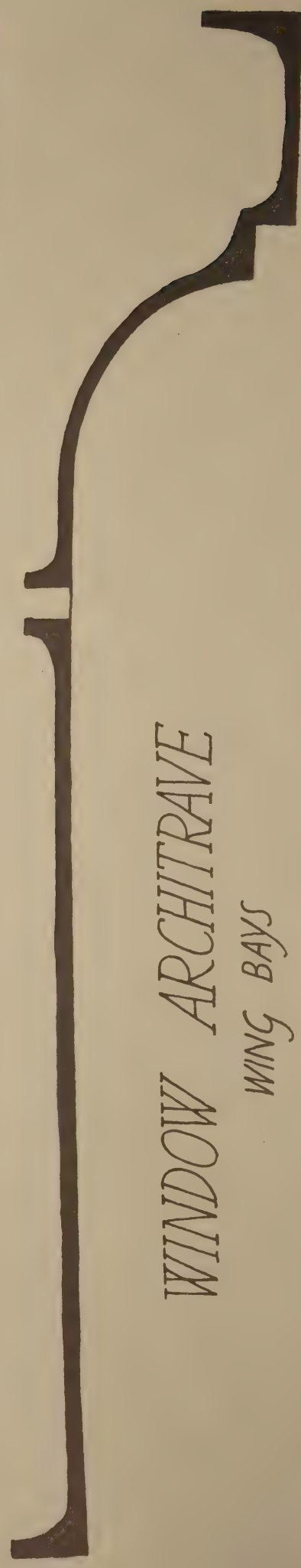
NOTE CORNICES BUILT UP WITH HEADER
COURSES EXCEPT MEMBER "C"
WHICH SHEWS ALL STRETCHERS

CROMWELL
HOUSE,
HIGHGATE.

FULL SIZE DETAILS



WINDOW ARCHITRAVE
CENTRAL BAY



WINDOW ARCHITRAVE
WING BAYS



WILLMER HOUSE, FARNHAM

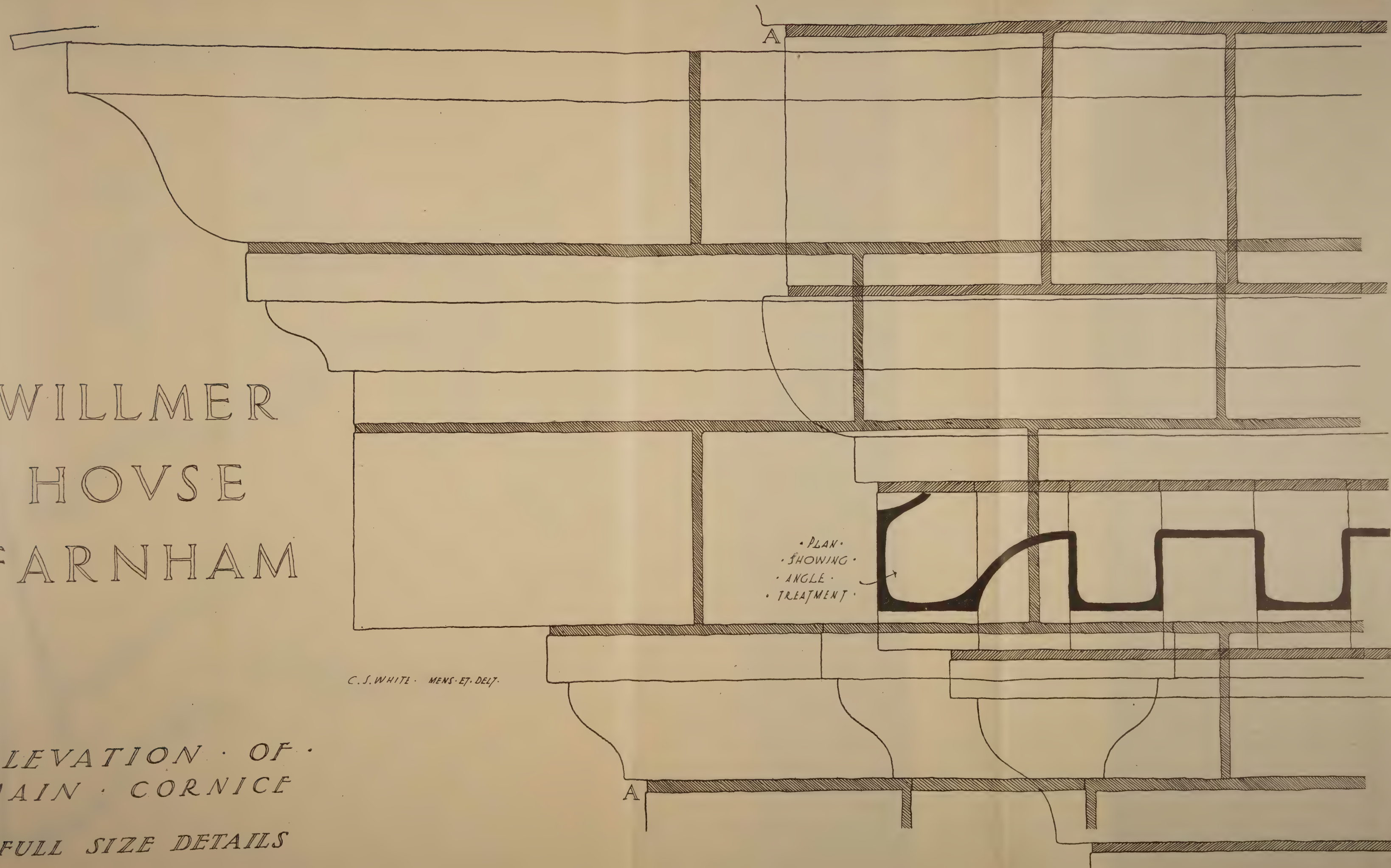
C. S. WHITE, A.R.I.B.A.
MENS. ET. DELT

WILLMER
HOVSE
FARNHAM

ELEVATION · OF ·
MAIN · CORNICE
FULL SIZE DETAILS

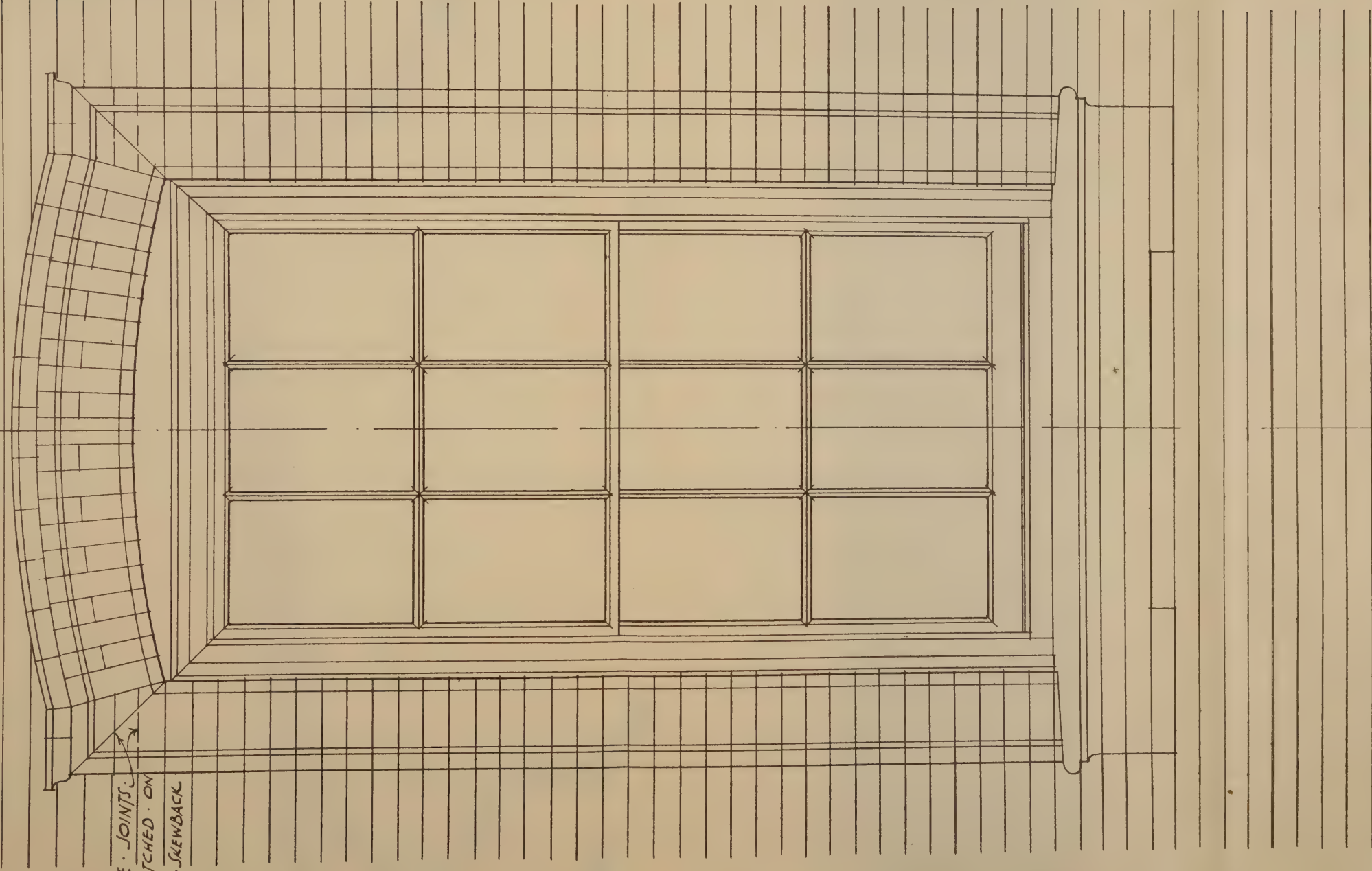
C. S. WHITE · MENS · ET · DEL ·

· PLAN ·
· SHOWING ·
· ANGLE ·
· TREATMENT ·



DETAIL OF FIRST FLOOR WINDOWS

UNDER-SIDE OF SECOND FLOOR STRING



FALSE JOINTS
SCRATCHED ON
SOLID SHEET

C.S. WHITE MENS ET DELT

WILLMER HOVSE
FARNHAM

WILLMER HOVSE FARNHAM

FVLL · SIZE · BRICK · MOVLINGS ·

HOOD ·

WINDOW ·
ARCHITRAVE ·
1ST & 2ND FLOORS ·

2ND FLOOR ·
SILL ·

1ST FLOOR ·
SILL ·

WOOD · BED · MOVL ·

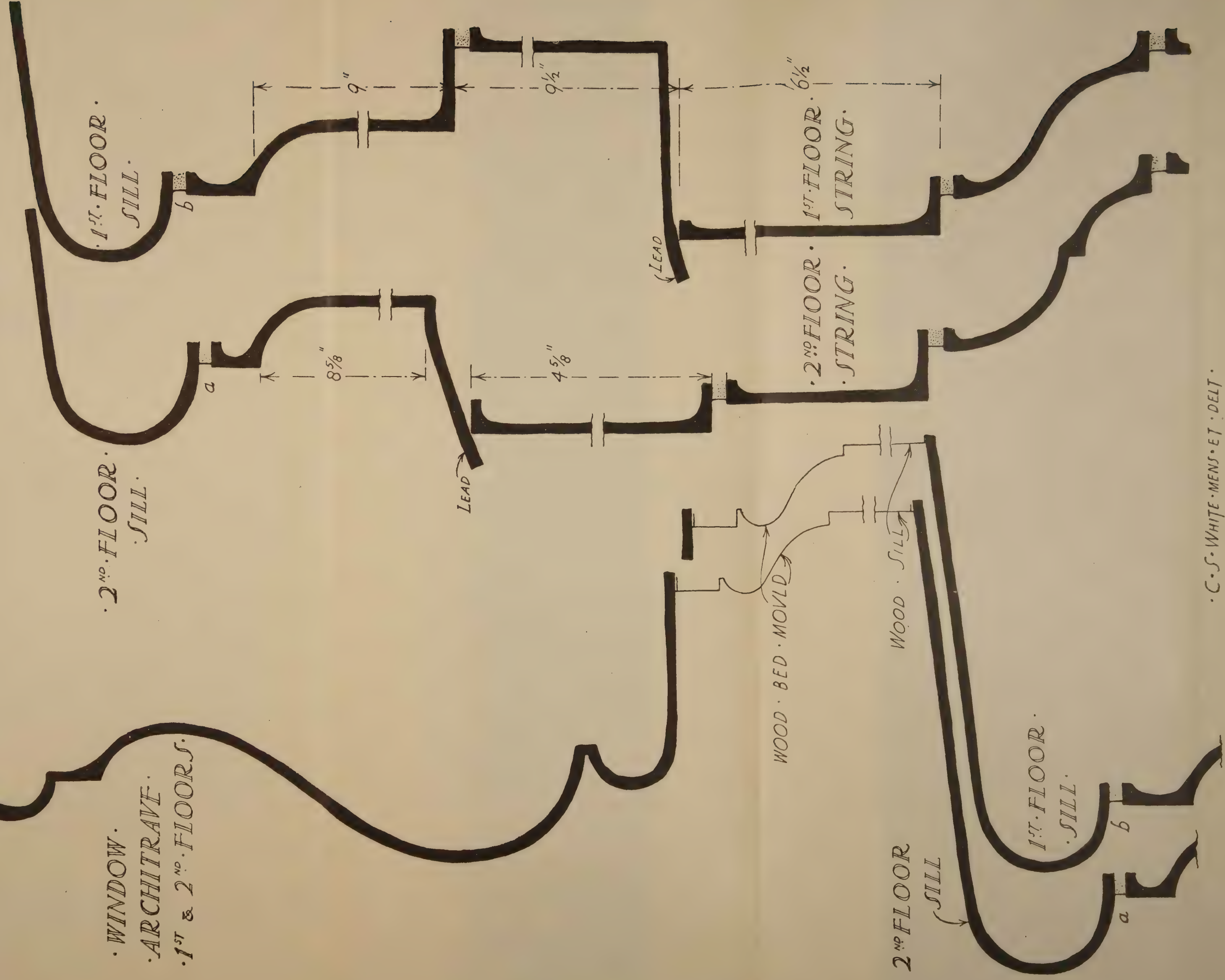
2ND FLOOR ·
SILL ·

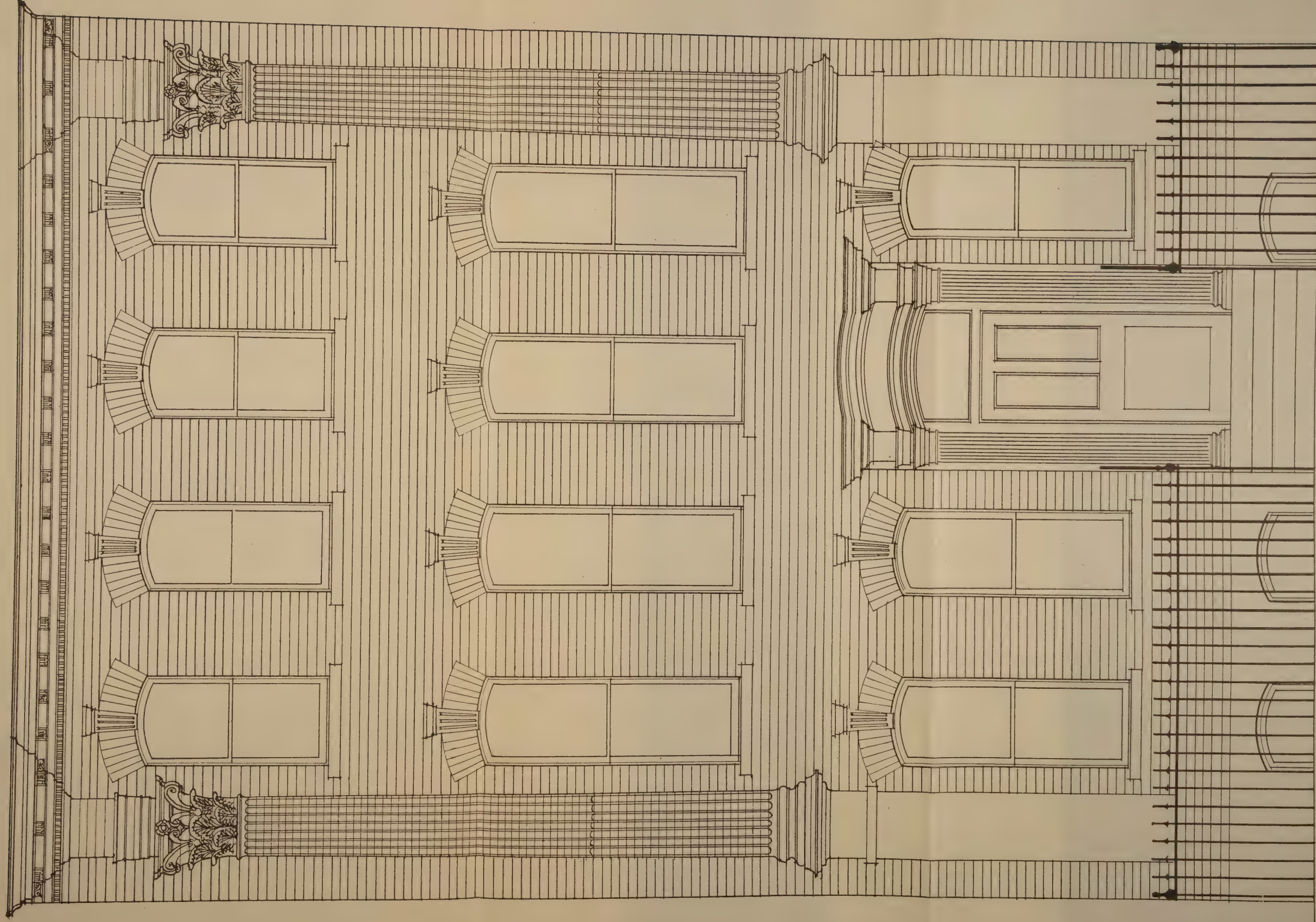
WOOD · SILL ·

1ST FLOOR ·
SILL ·

2ND FLOOR ·
STRING ·

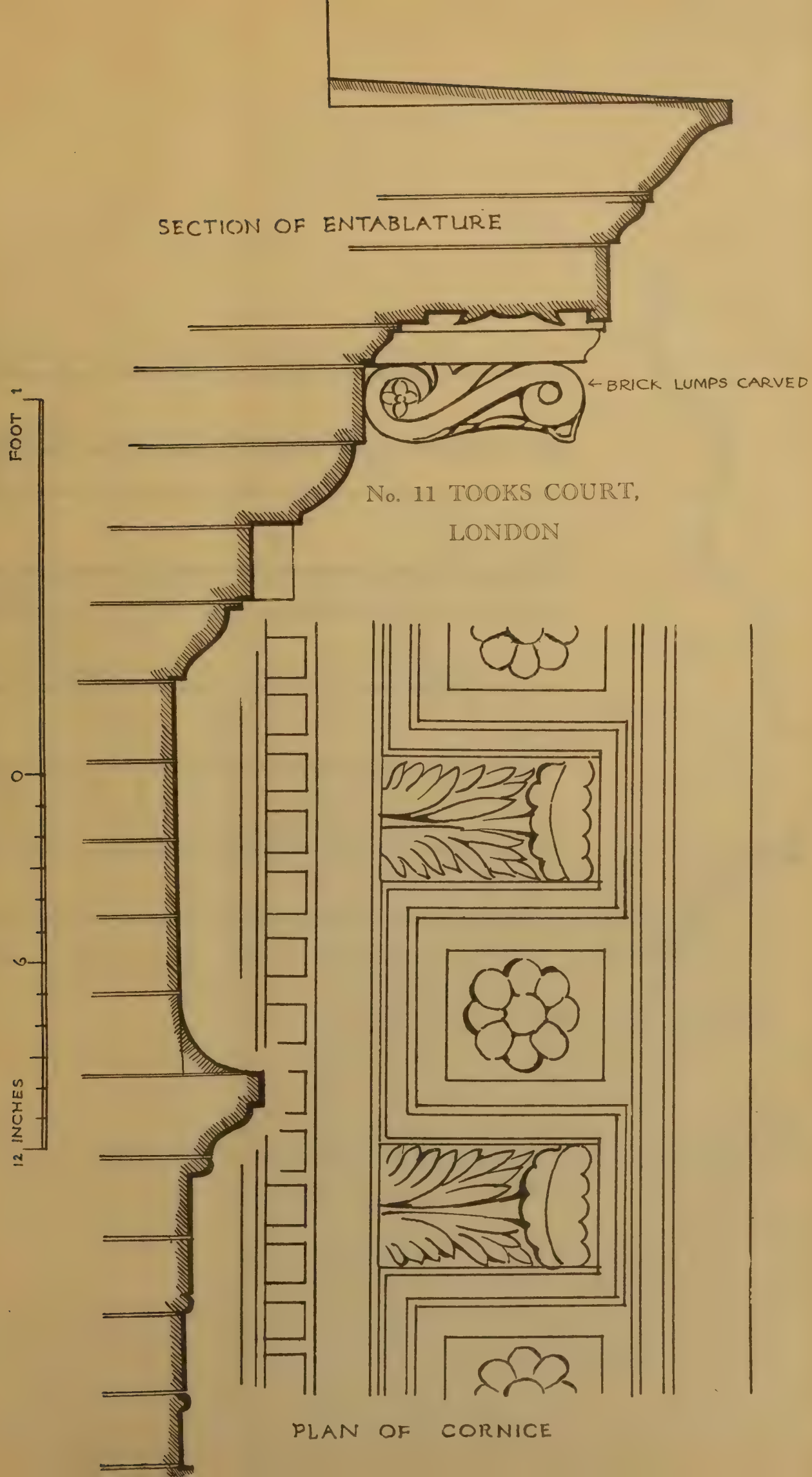
1ST FLOOR ·
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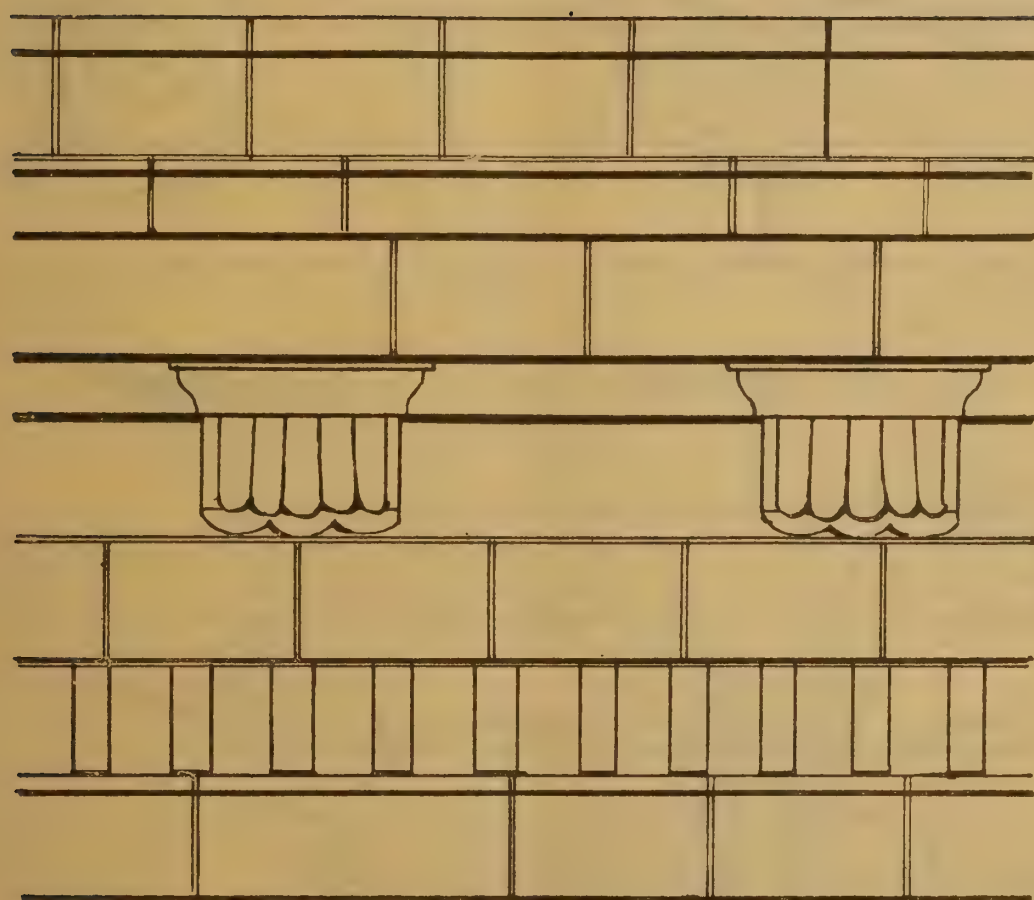




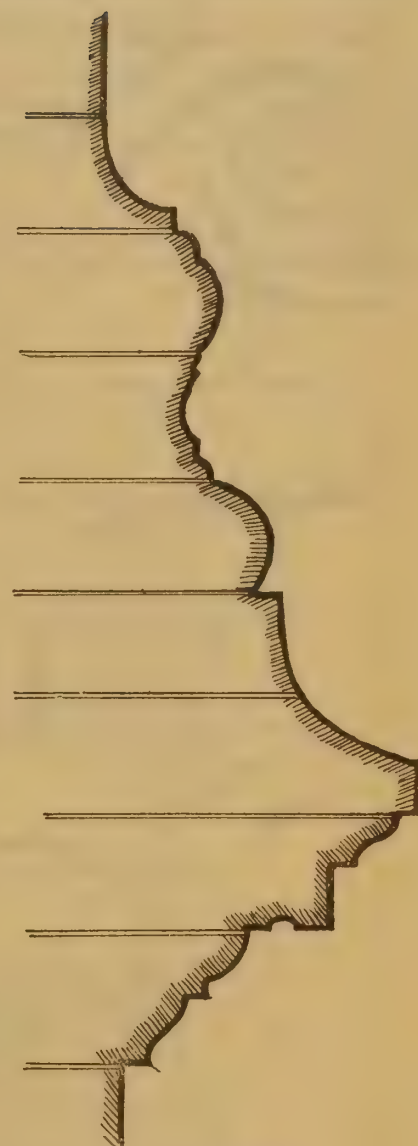
NO 11 TOOKS COURT LONDON ELEVATION

INCHES 0 5 10 15 20 FEET
w R Boulton mens et del
Christopher Green April 1924





PART ELEVATION OF CORNICE



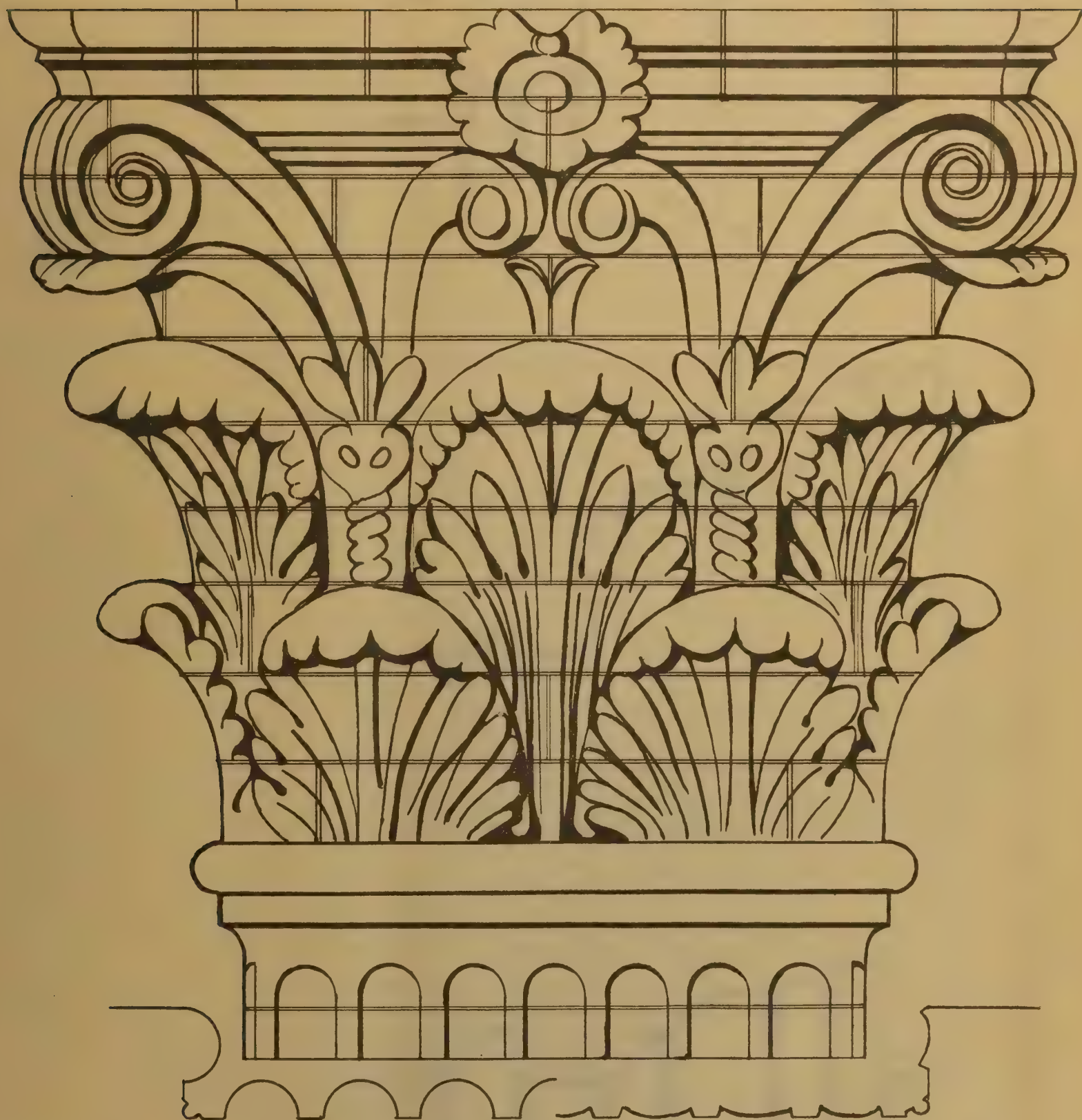
SECTION OF BASE



No. 11 TOOKS COURT, LONDON

No. 11 TOOKS COURT, LONDON

CORINTHIAN CAPITAL



PLAN OF PILASTER

12 INCHES

6

0

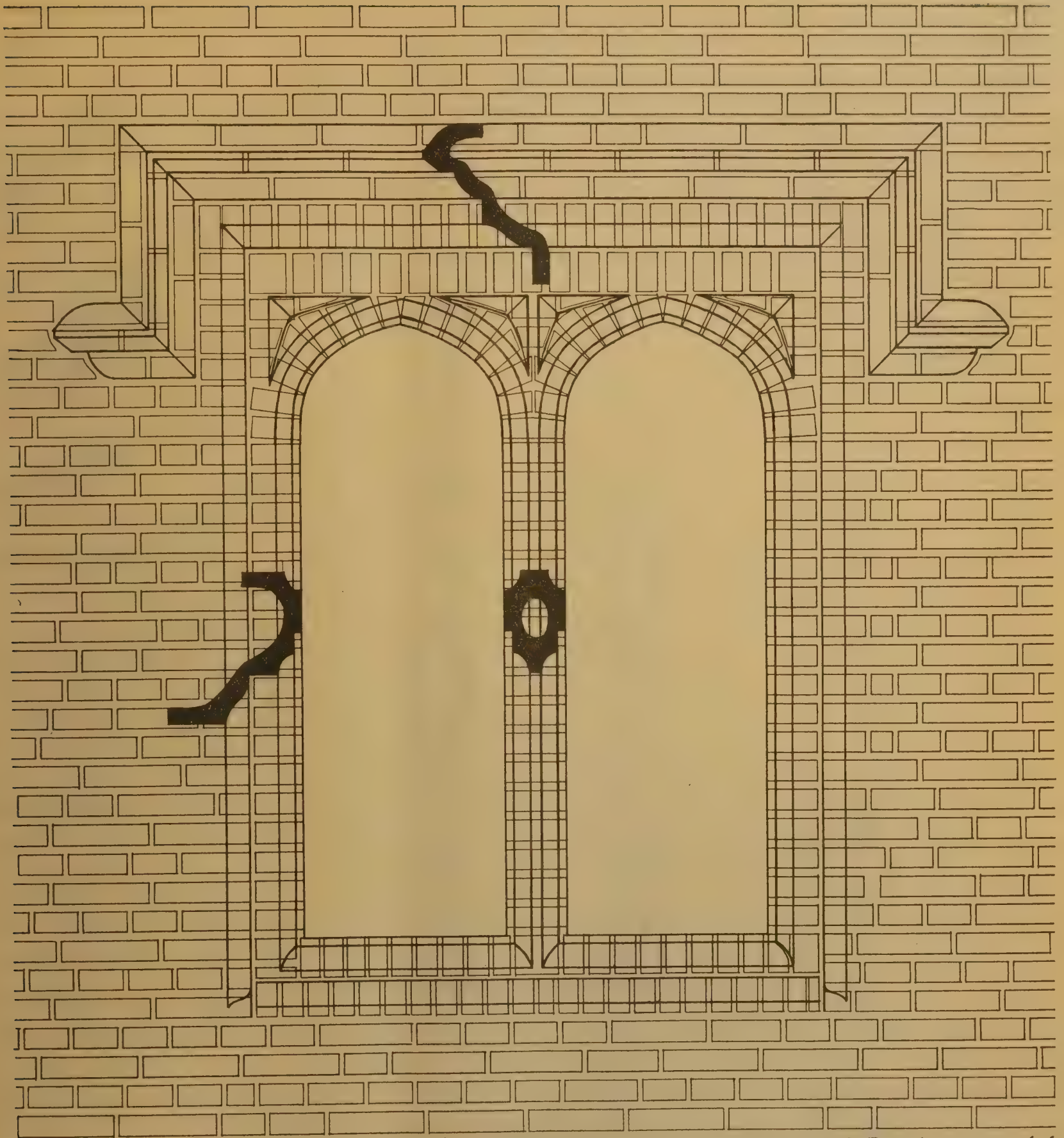
FOOT 1

W.R.B. meas.
C.G. desc
April 1924

GATEWAY AT CHESTERTON, WARWICKSHIRE

Details of mouldings





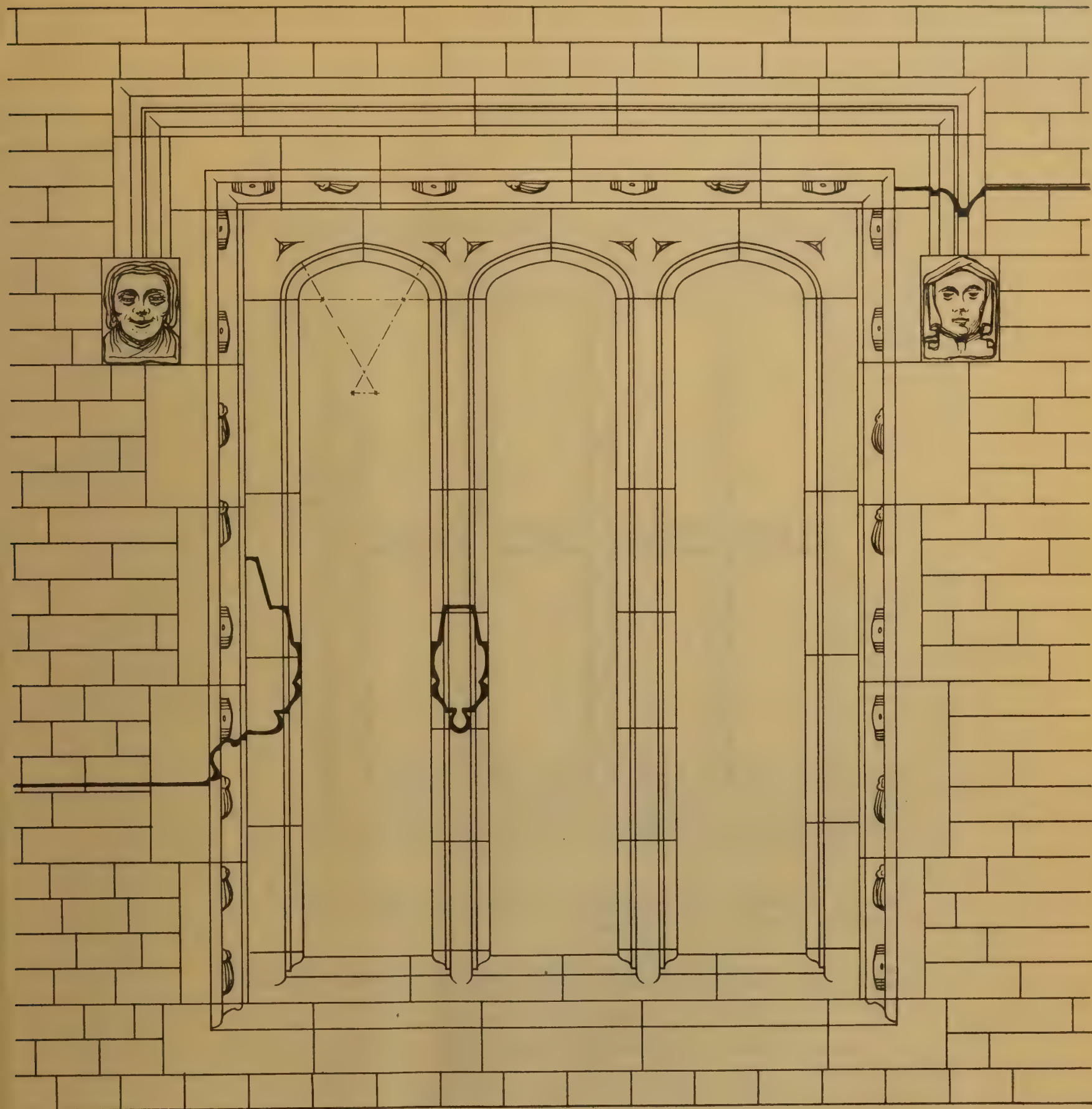
Dorothy M. Buckmaster del.



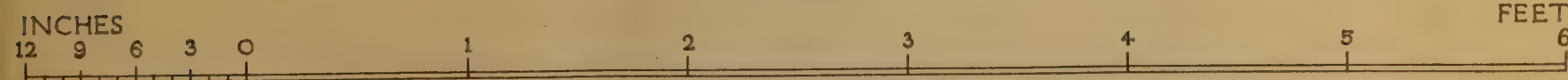
SCALE

BISHOP OF ELY'S PALACE, HATFIELD

Window c. 1480

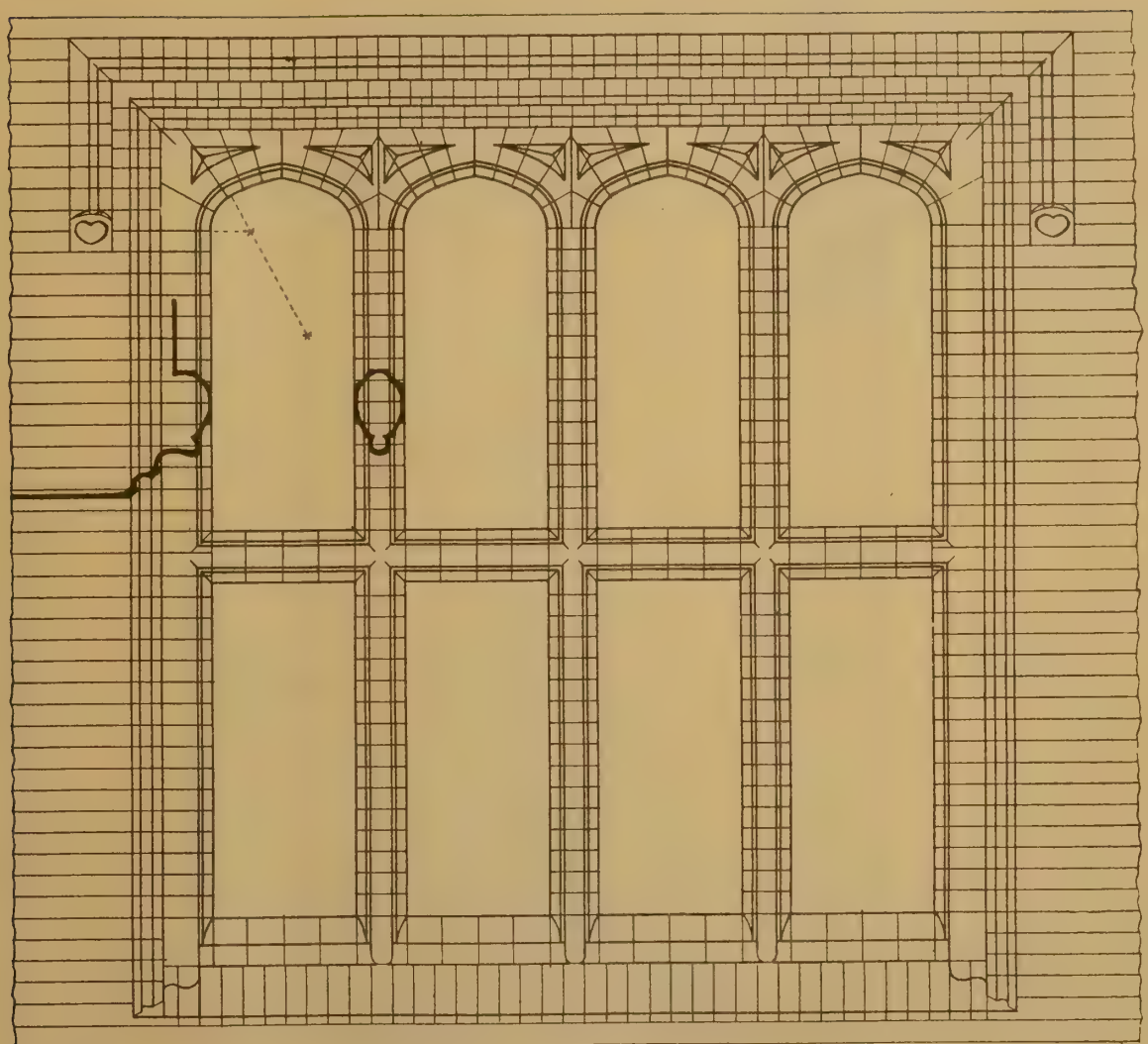


SCALE



WINDOW AT GREAT SNORING RECTORY, NORFOLK

Early 16th century

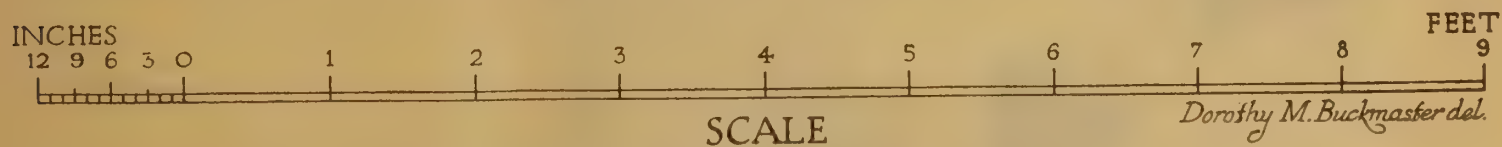
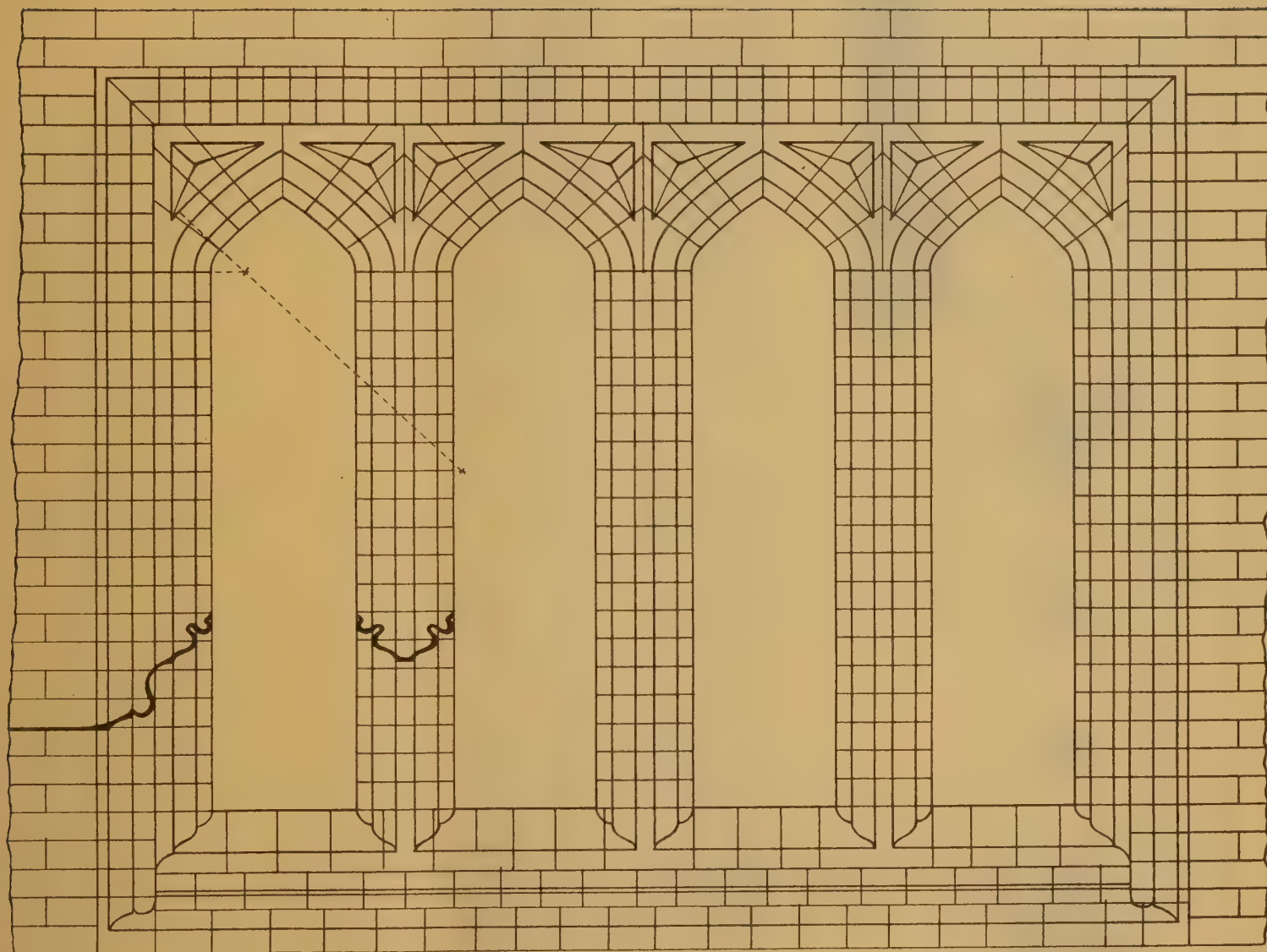


INCHES 12 6 0 1 2 3 4 5 6 7 8 9 10 FEET
 SCALE *Dorothy M. Buckmaster del.*

EAST BARSHAM MANOR HOUSE, NORFOLK

1st floor window of tower. c. 1525

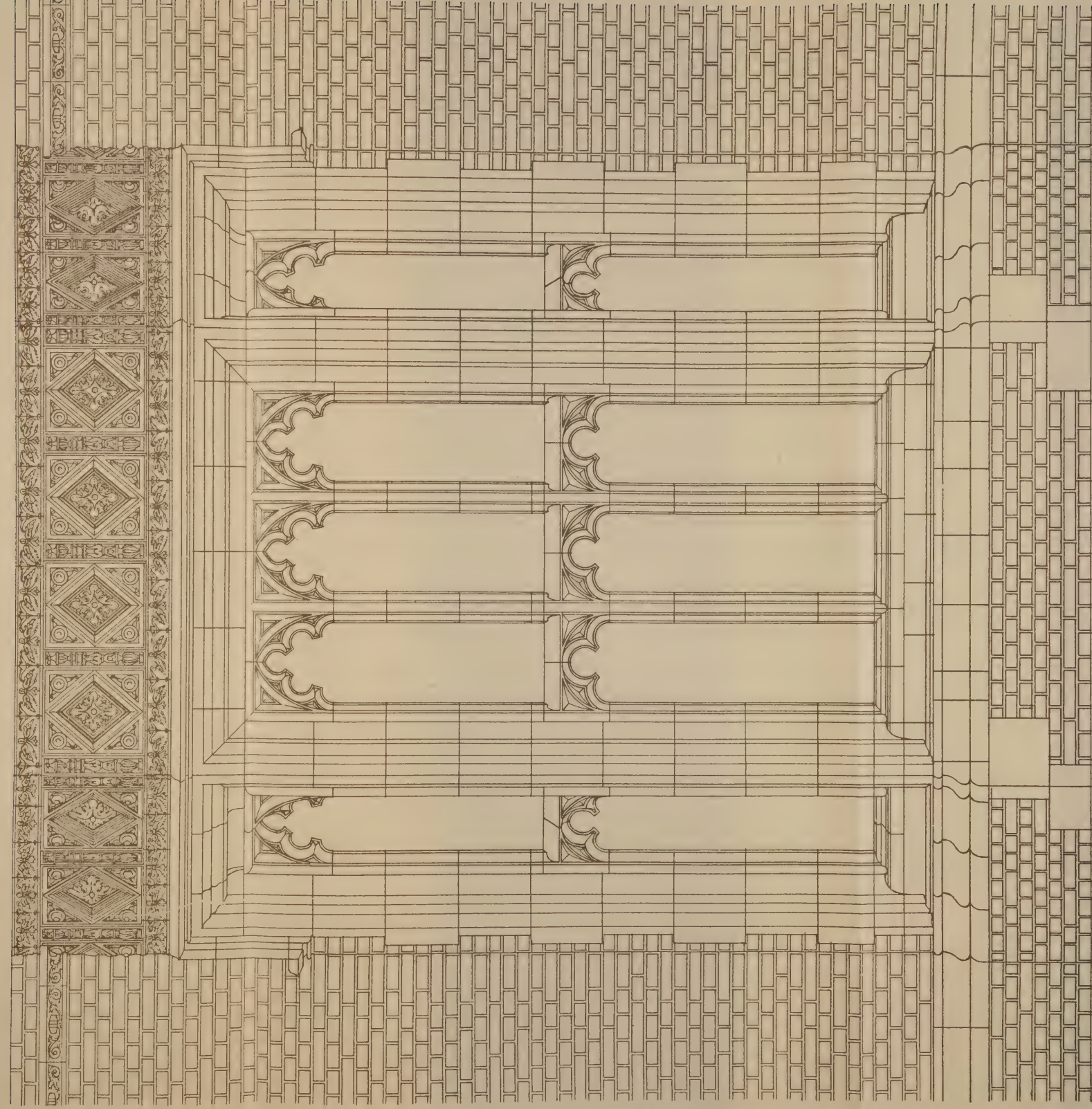
Owing to the plaster rendering, the jointing at mitres, etc., cannot be completed



EAST BARSHAM MANOR HOUSE, NORFOLK

Ground floor window of tower. c. 1525

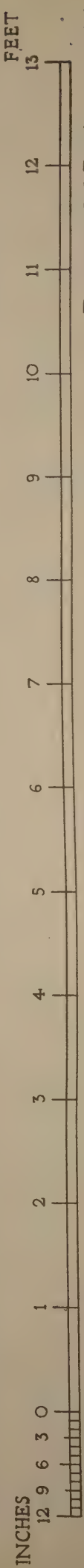
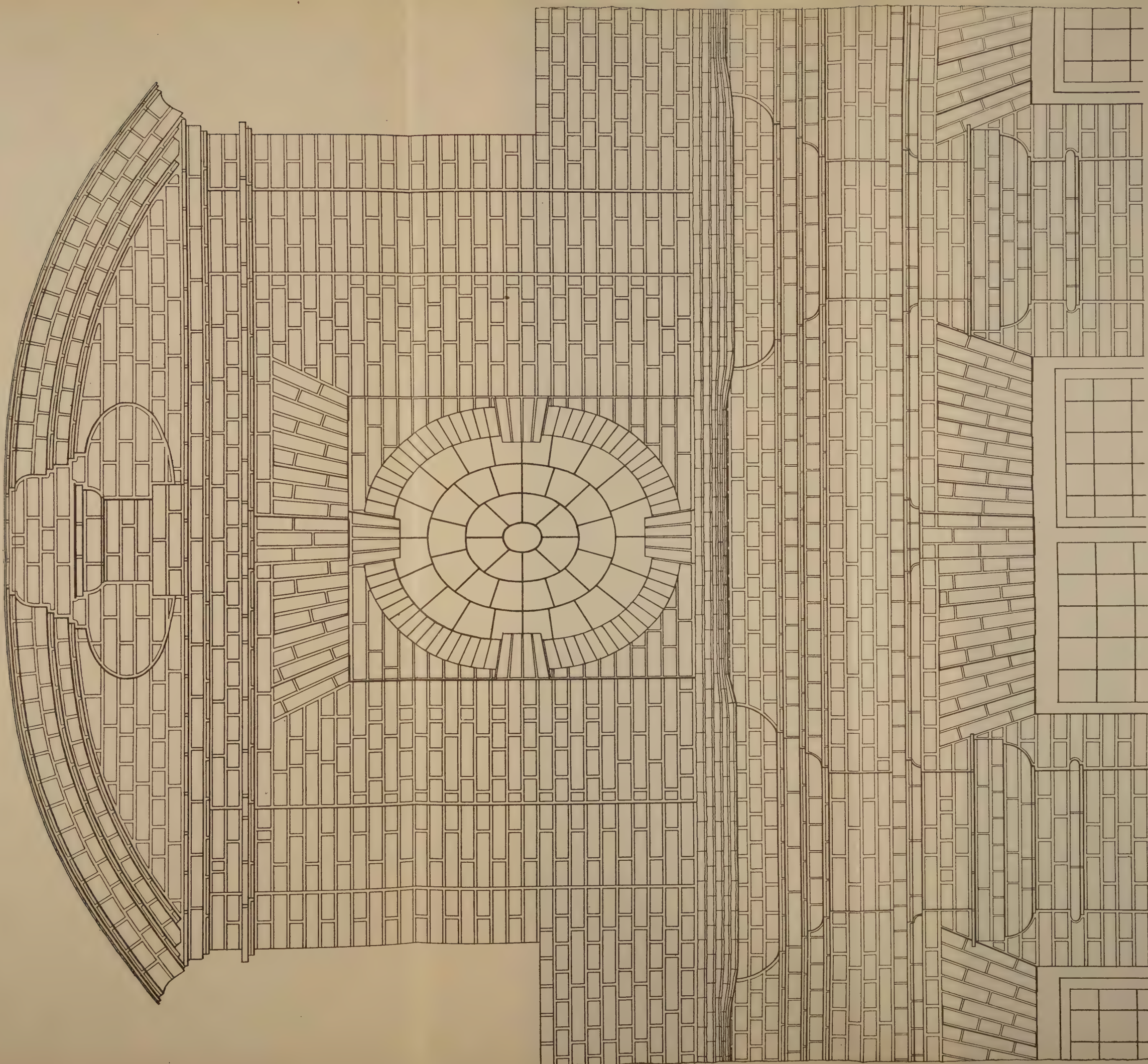
Owing to the plaster rendering, the jointing of arches cannot be definitely determined



Dorothy M. Buckmaster del.

SUTTON PLACE, Near GUILDFORD

Bay Window. Plan and Half Elevation. c. 1523-7

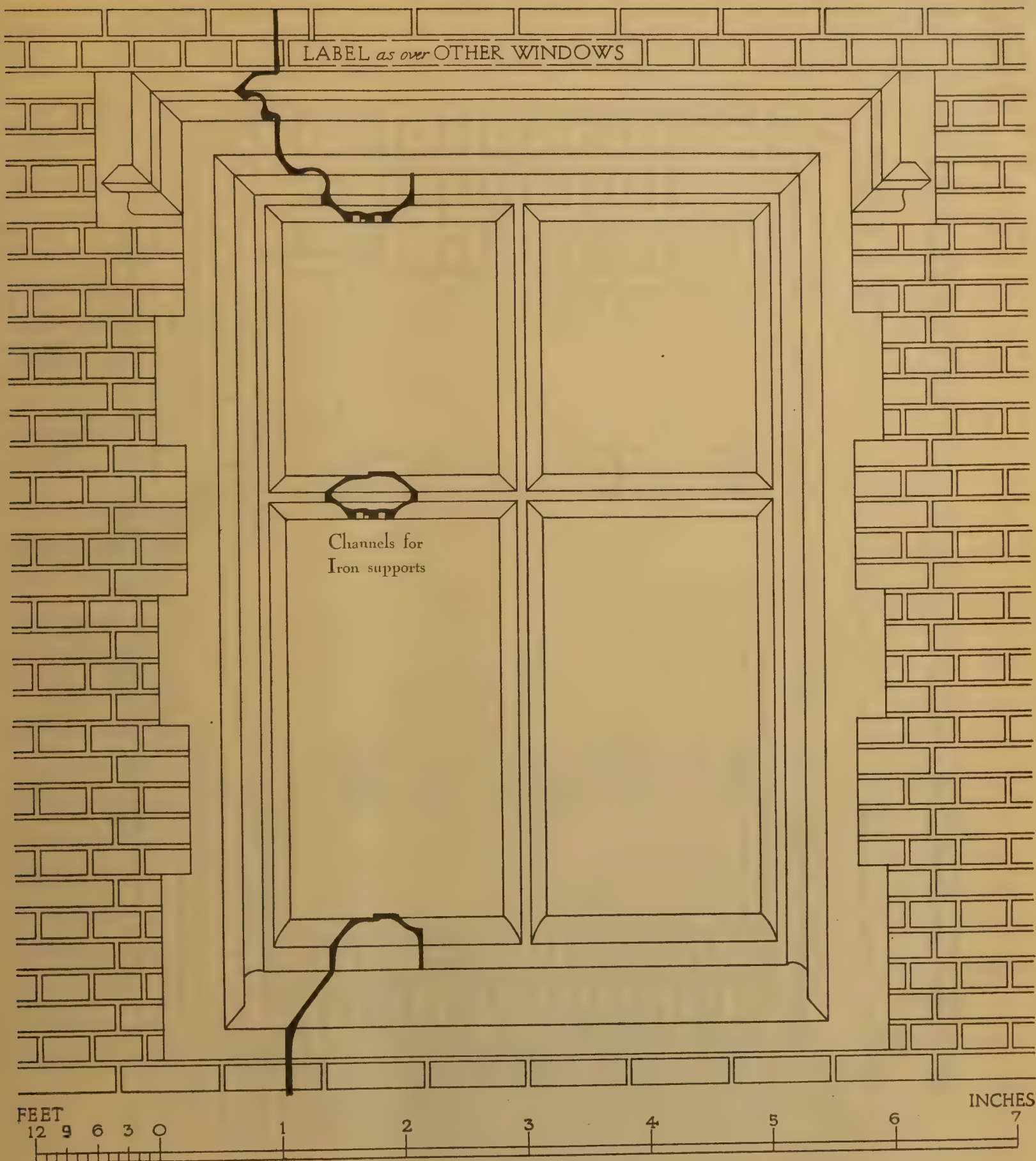


Dorothy M. Buckmaster del.

SCALE

POCOCK'S SCHOOL, RYE

Detail of centre dormer, pilaster caps and entablature; before 1638

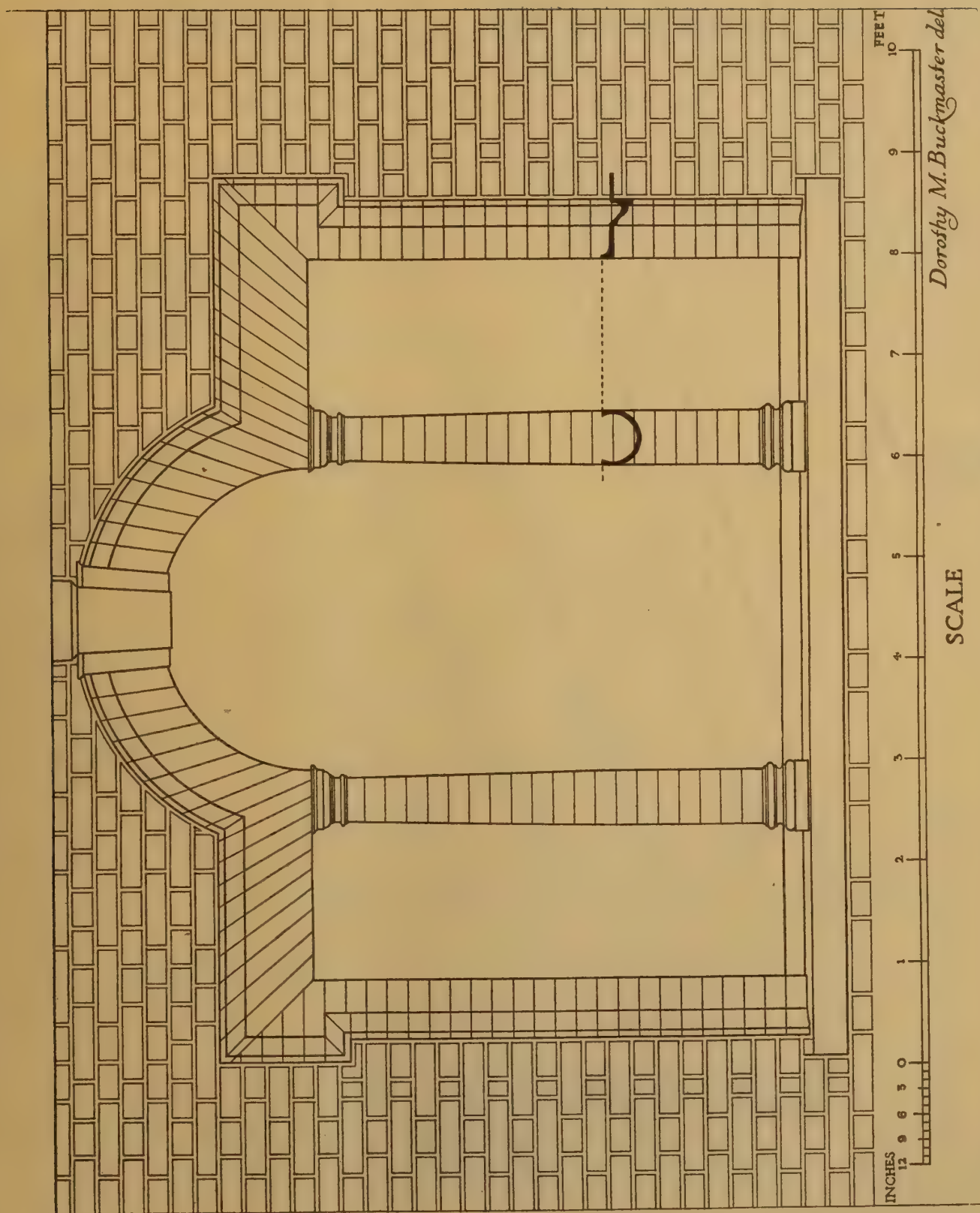


SCALE

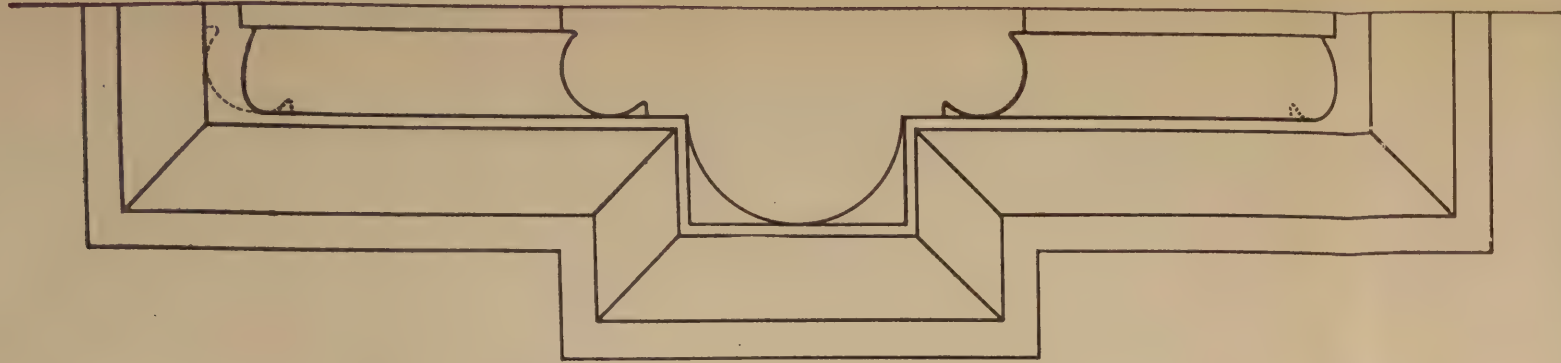
Dorothy M. Buckmaster del.

BARKING, ESSEX. EASTBURY MANOR HOUSE

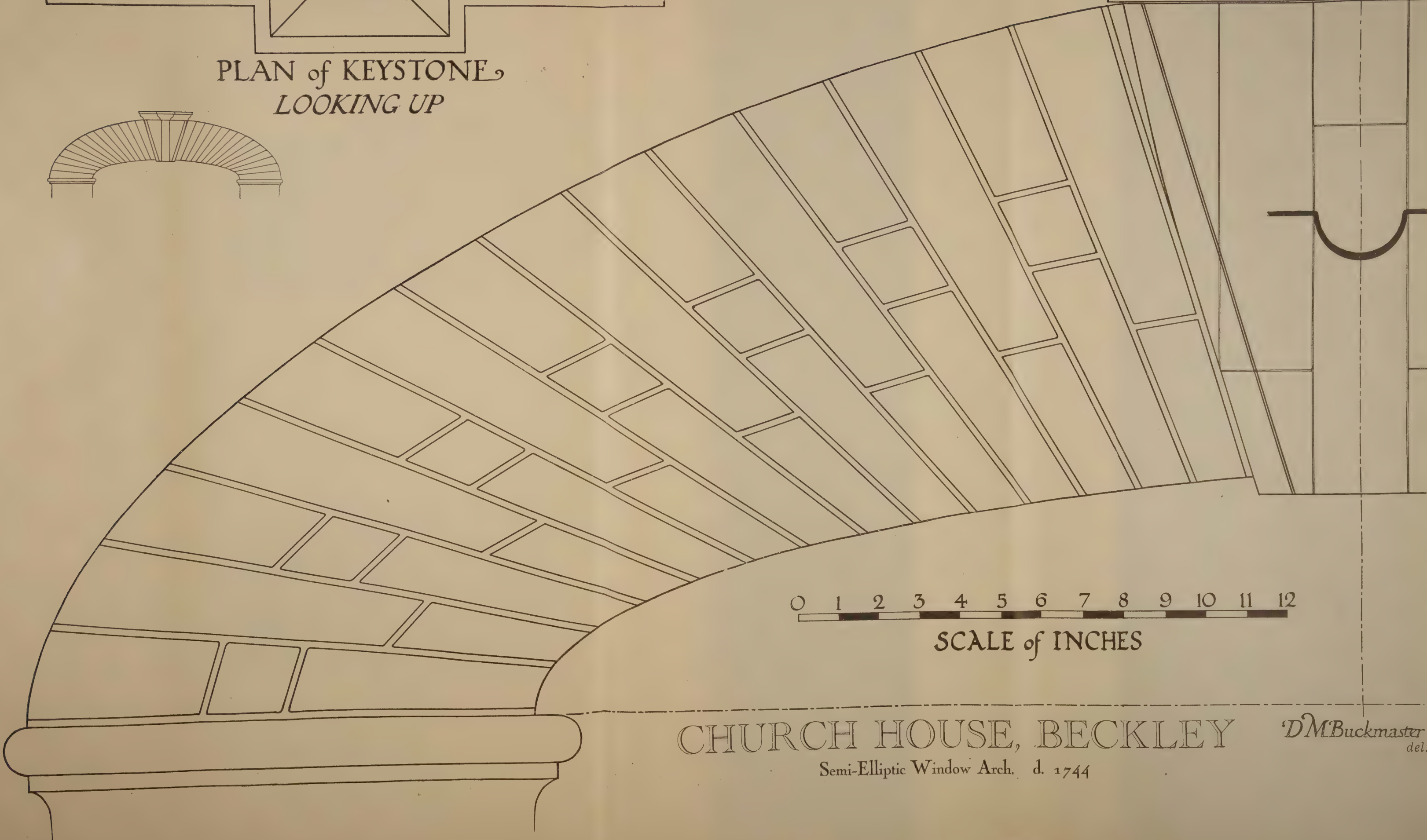
c. 1550



Essex. COLCHESTER. Brick Venetian Window in Crouch Street. Another at first floor of a house in West Stockwell Street is by the same hand (see p. 306). A fine example of the use of brick where stone is more frequently the material employed.



PLAN of KEYSTONE,
LOOKING UP



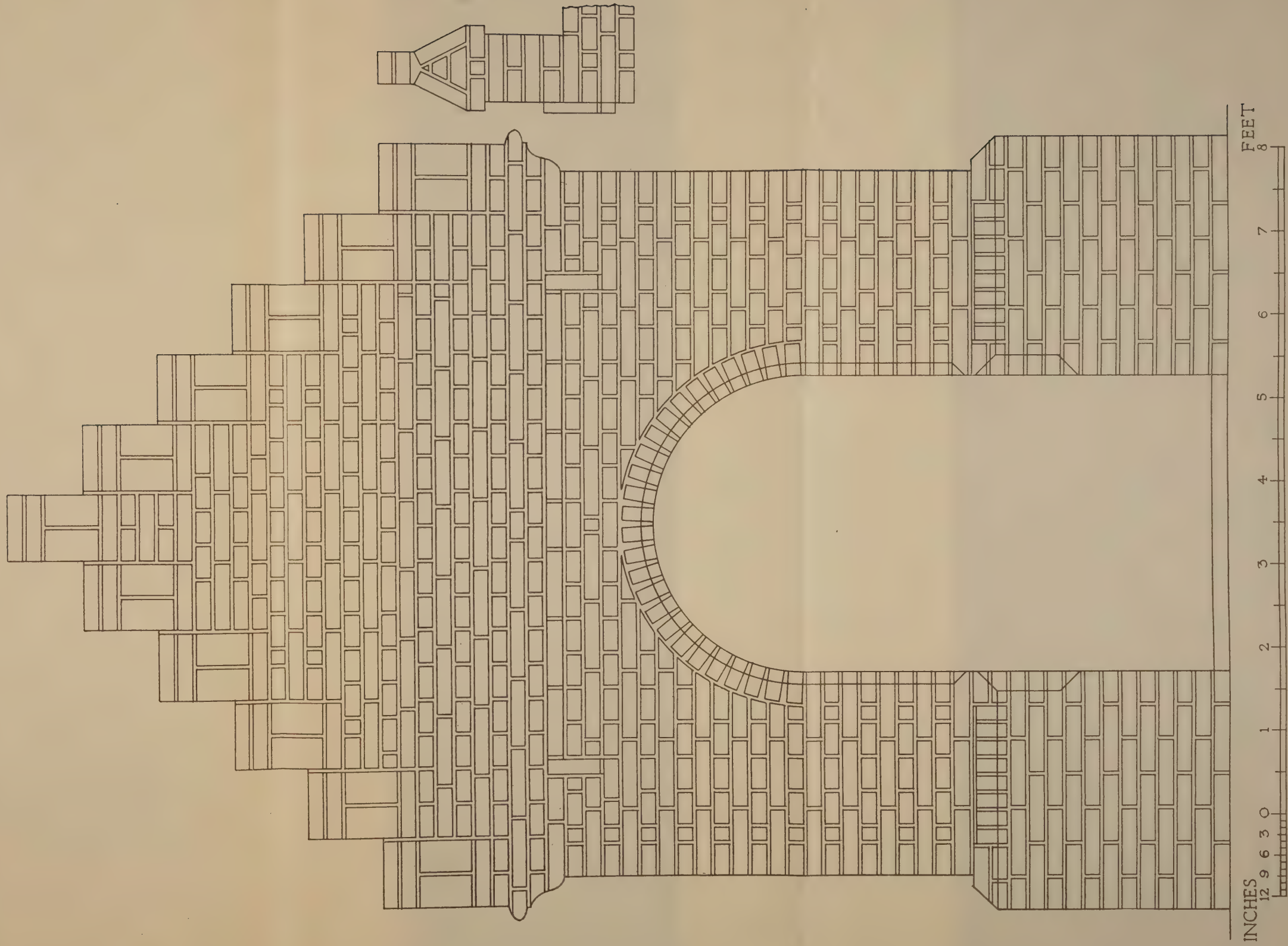
0 1 2 3 4 5 6 7 8 9 10 11 12

SCALE of INCHES

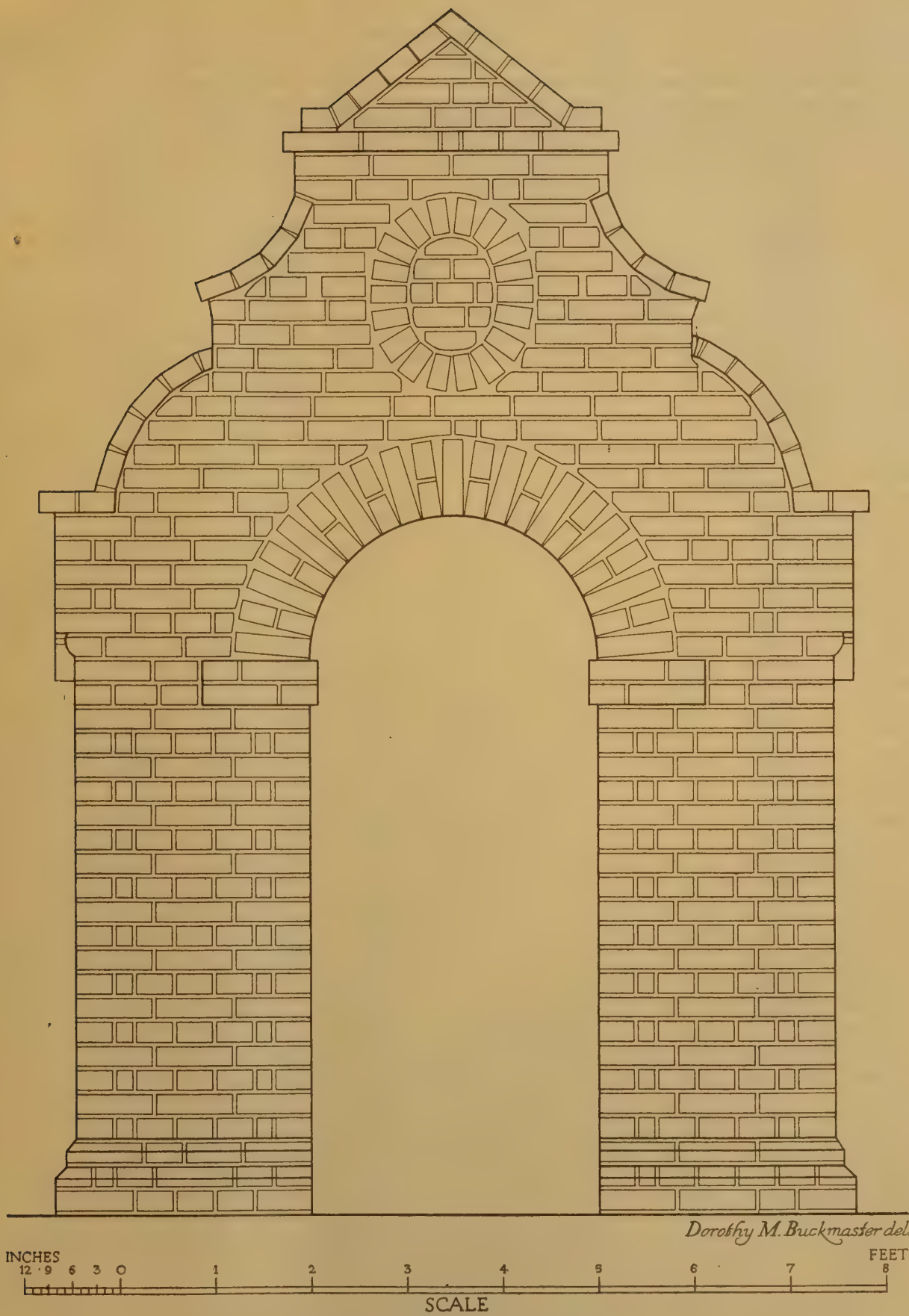
CHURCH HOUSE, BECKLEY

Semi-Elliptic Window Arch. d. 1744

*DM*Buckmaster
del.

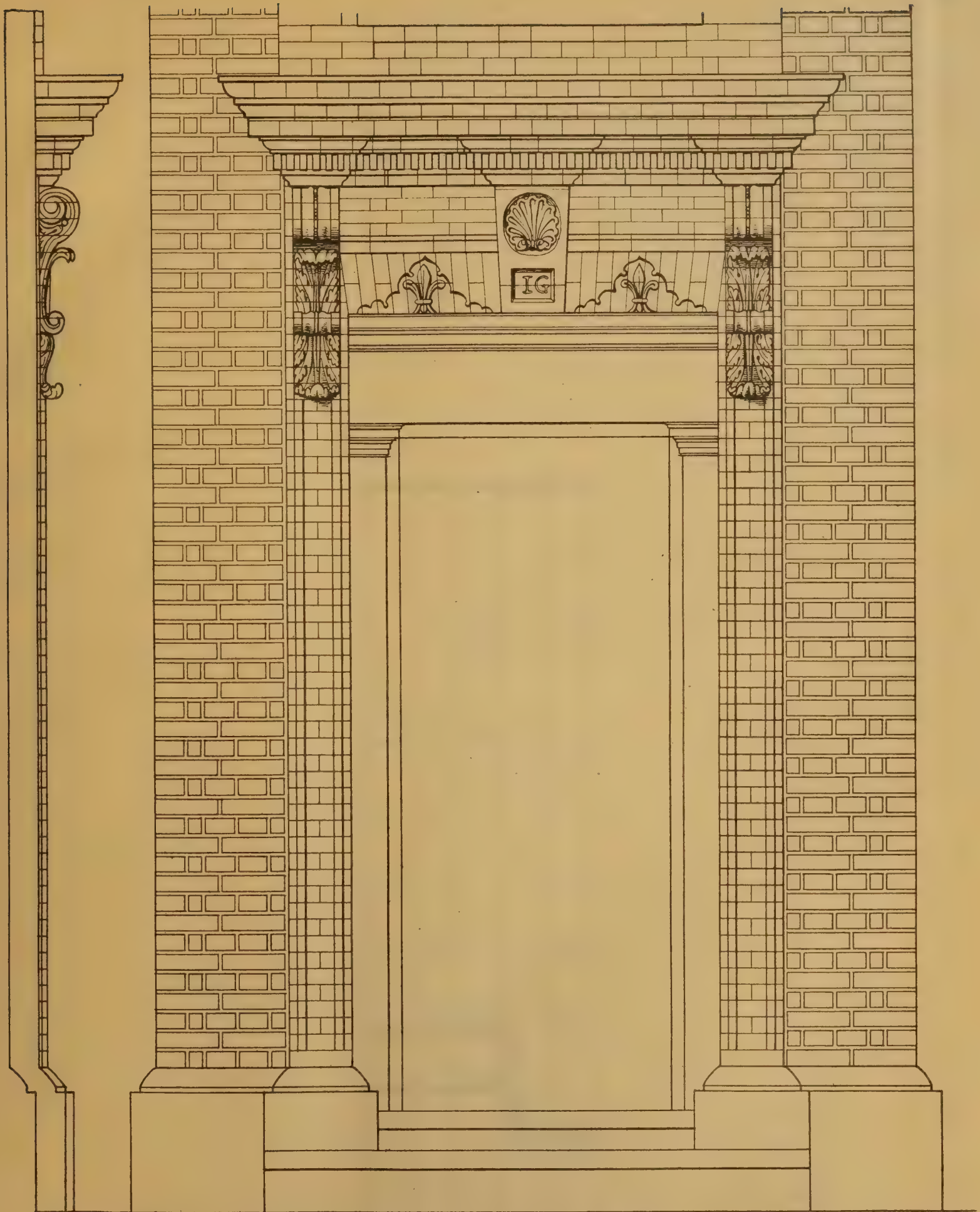


BRUNGER'S FARM, TENTERDEN, KENT
Porch c. 1540



GUILTON, KENT

Porch of House. d. 1691

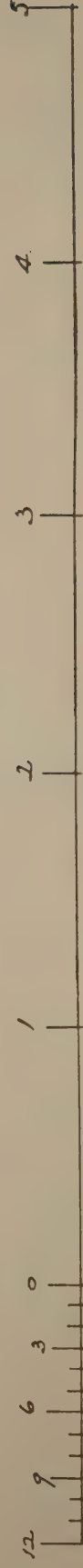
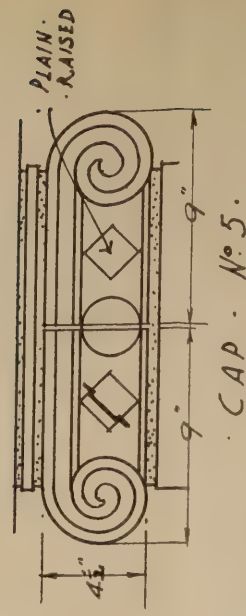
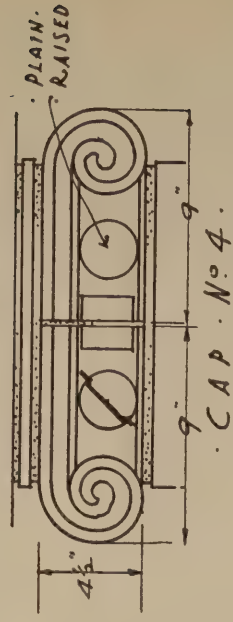
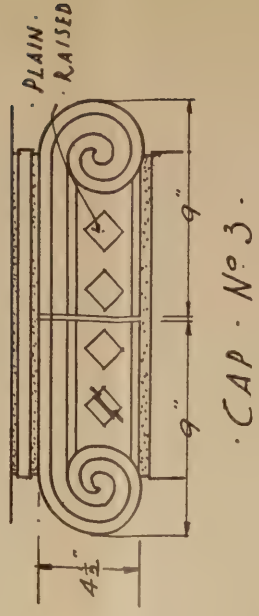
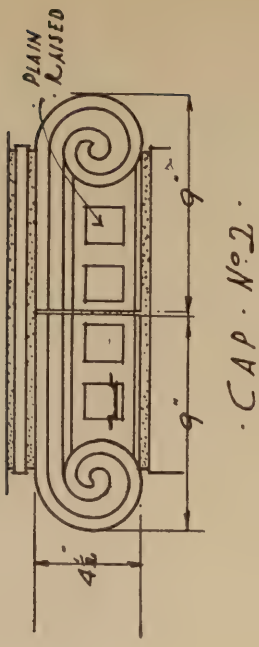
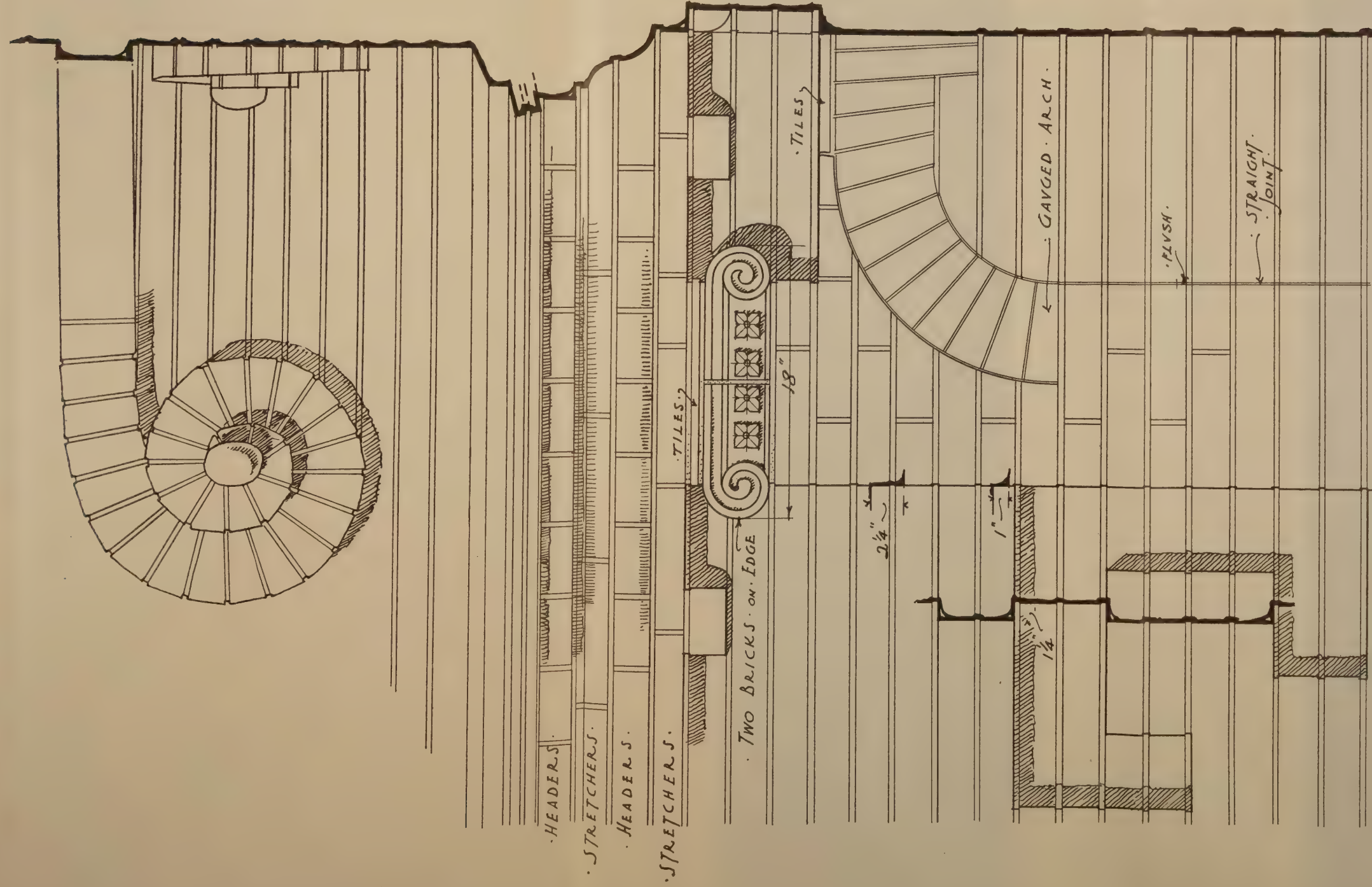


SCALE

Dorothy M. Buckmaster del.

THE CONVENT IN LONGBRIDGE, FARNHAM

Cut, rubbed and carved, gauged brick doorway. d. 1717



SCALE of FEET.

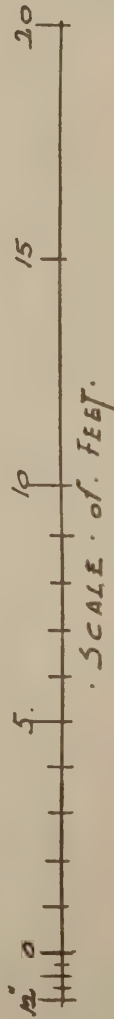
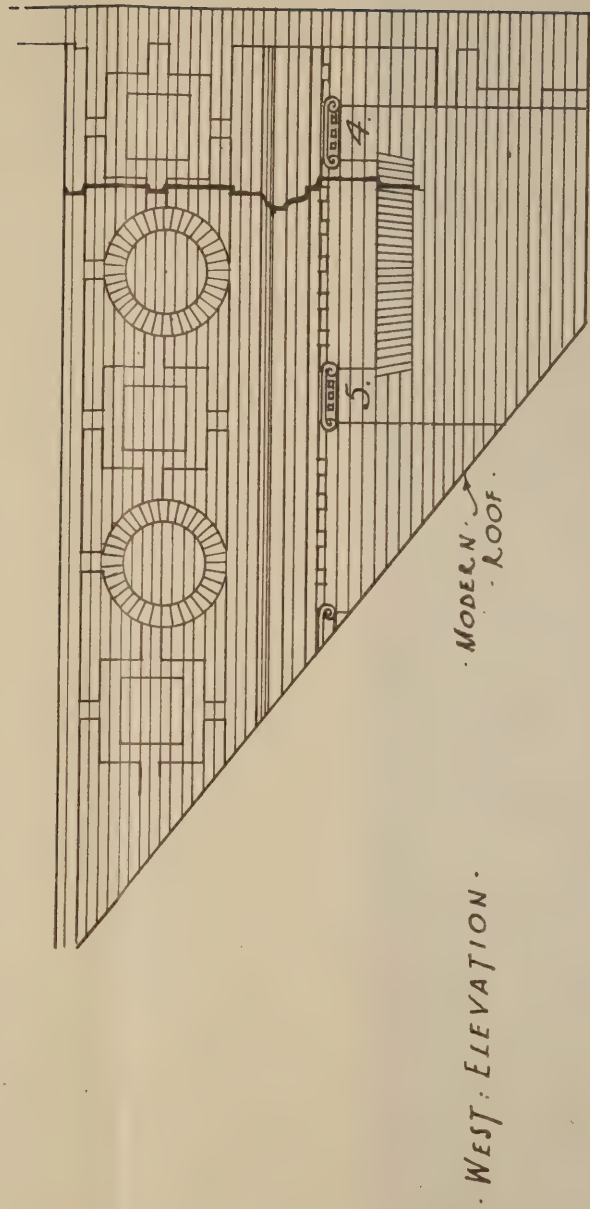
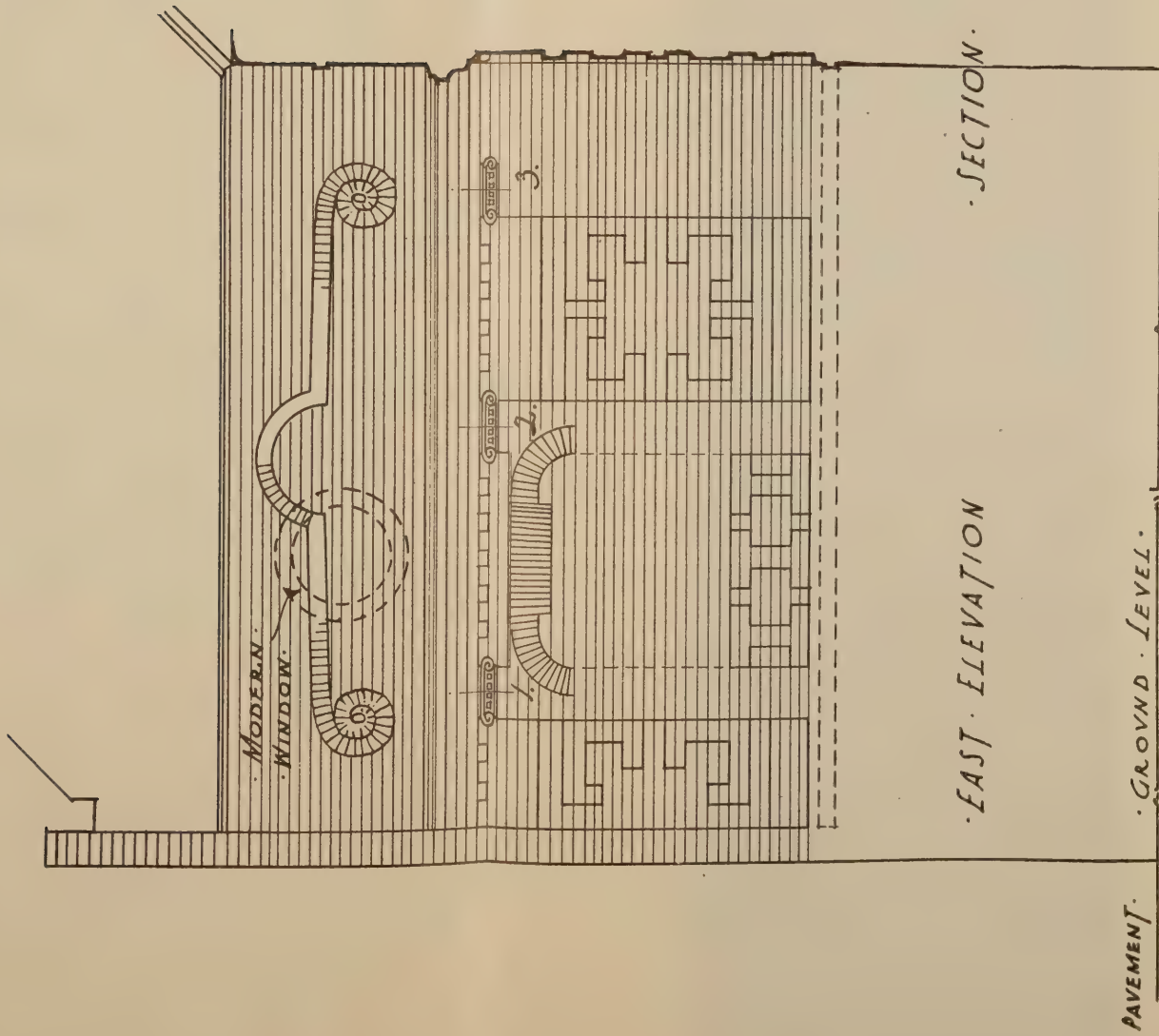
17th century

OLD TOWN HALL, FARNHAM, CUT BRICKWORK

C. S. WHITE.
MENS. ET. DELT. 1921

CUT BRICKWORK
OLD TOWN HALL,
FARNHAM

C. S. WHITE
MENS ET DELT. 1921

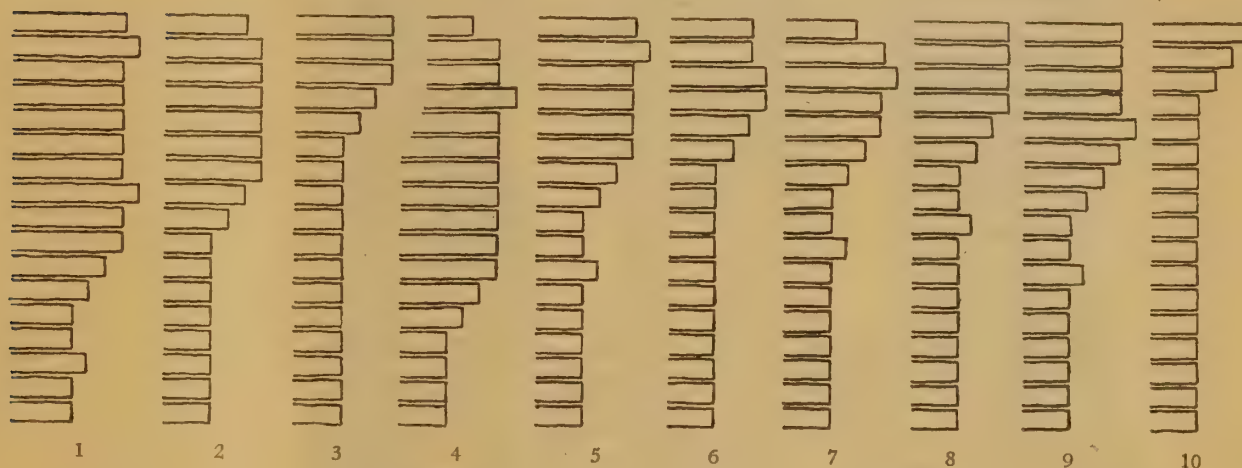


GROUND LEVEL.

PAVEMENT.

PROFILES OF BRICK CHIMNEY CAPS

These caps are built of thin bricks, except No. 16, and certain others where a specially thick brick has been used for certain members. The projection of the sailing courses does not exceed $1\frac{1}{2}$ inches on face, some have less. If the bricks used were more than $2\frac{1}{4}$ inches thick, the projections would have to be reduced. The extent to which the crowning course is set back is important and varies with the design of the cap, e.g. Nos. 2, 4 and 7. In several of these caps the courses have not been re-set since they were built.



1 At Marden,
Kent

3 Sutton Place,
Guildford,
Surrey

5 Parkgate Farm,
Tenterden,
Kent

7 Batemans,
Burwash,
Sussex

9 The Cot,
Biddenden,
Kent

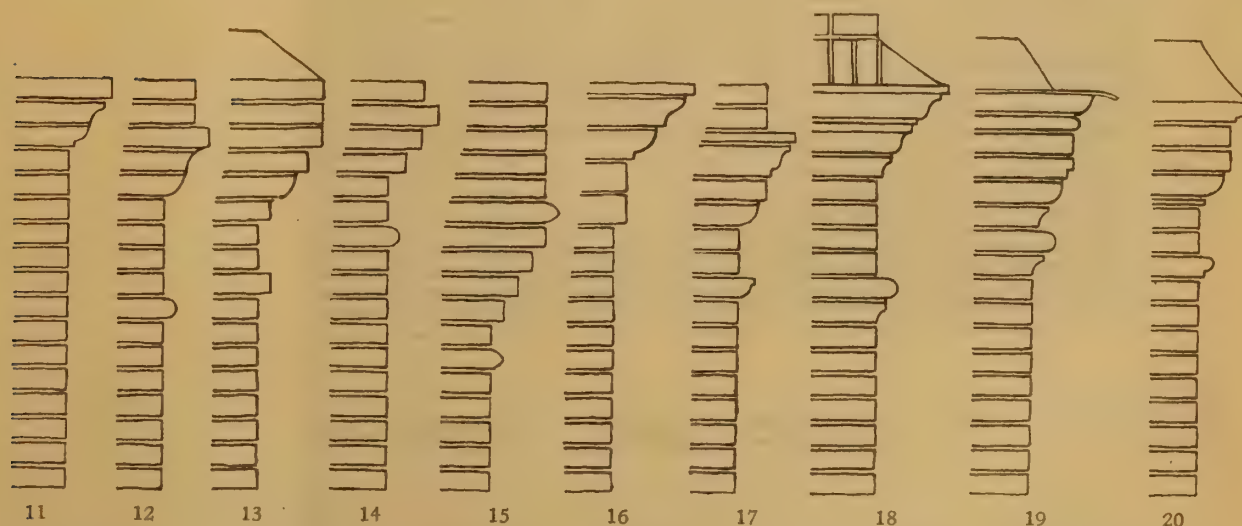
2 Sutton Place,
Guildford,
Surrey

4 Beech House,
Salehurst,
Sussex

6 Lower
Standard Farm,
Ninfield,
Sussex

8 Gate House,
Rolvenden,
Kent

10 Groombridge
Place, Kent, &
102, High St.,
Rye, Sussex



11 Bradbourne,
Larkfield,
Kent

13 Broome Park,
Kent

15 Cobham Hall,
Kent

17 Ferox Hall,
Tonbridge,
Kent

19 Tyttenhanger
Park,
Herts.

12 Finchcocks,
Gouldhurst,
Kent

14 Sandhurst,
Kent

16 The White
Hart,
Scole, Norfolk

18 Rampyndene,
Burwash,
Sussex

20 The Great
House,
Leyton, Essex

CHIMNEY STACK IN BRICKWORK.

OLD EXAMPLES FROM COMPTON WINYATES

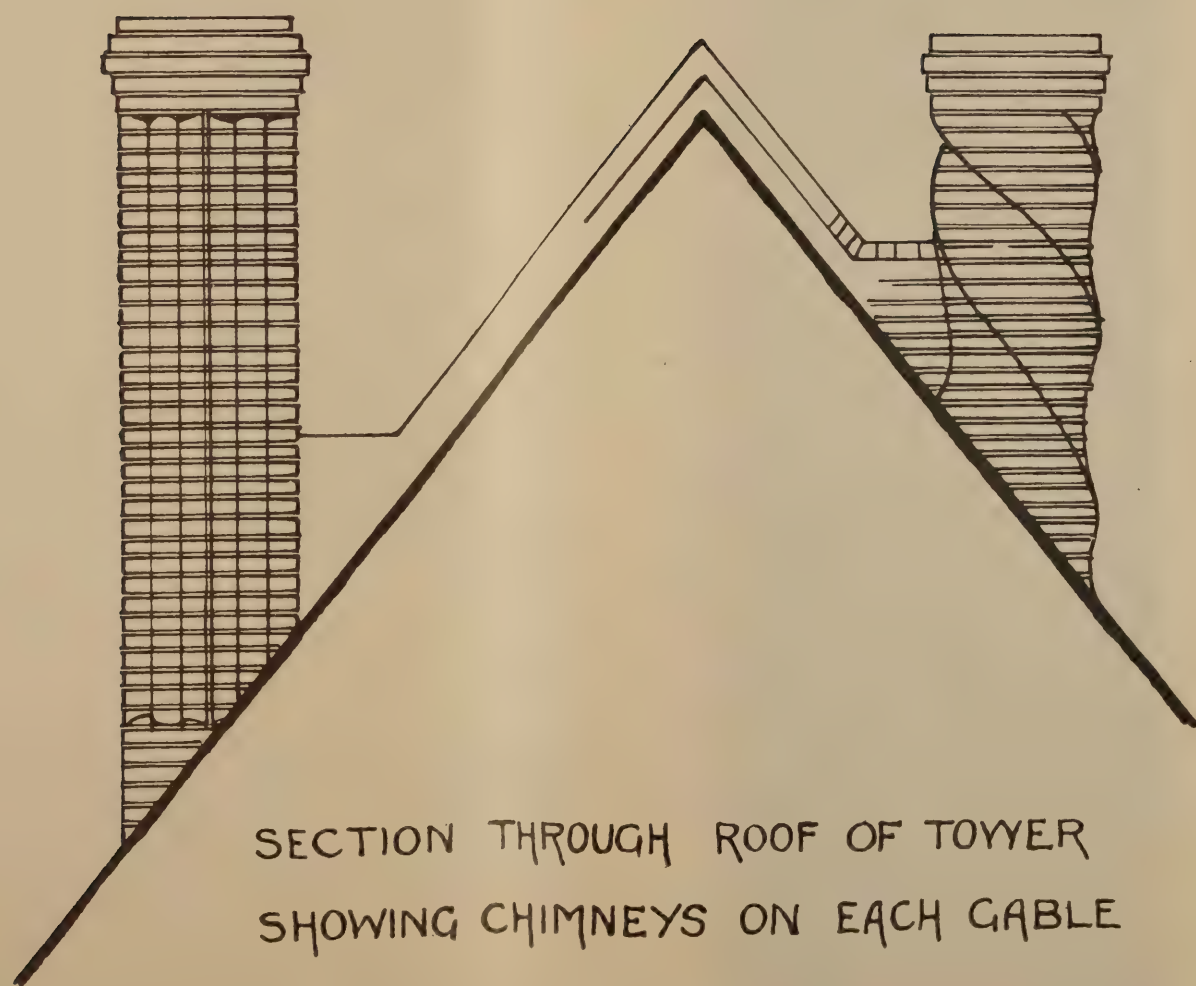
WARWICKSHIRE.



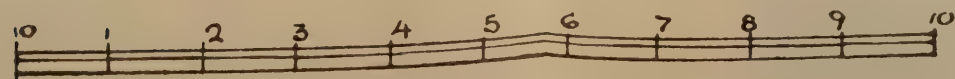
PLAN OF FLUE



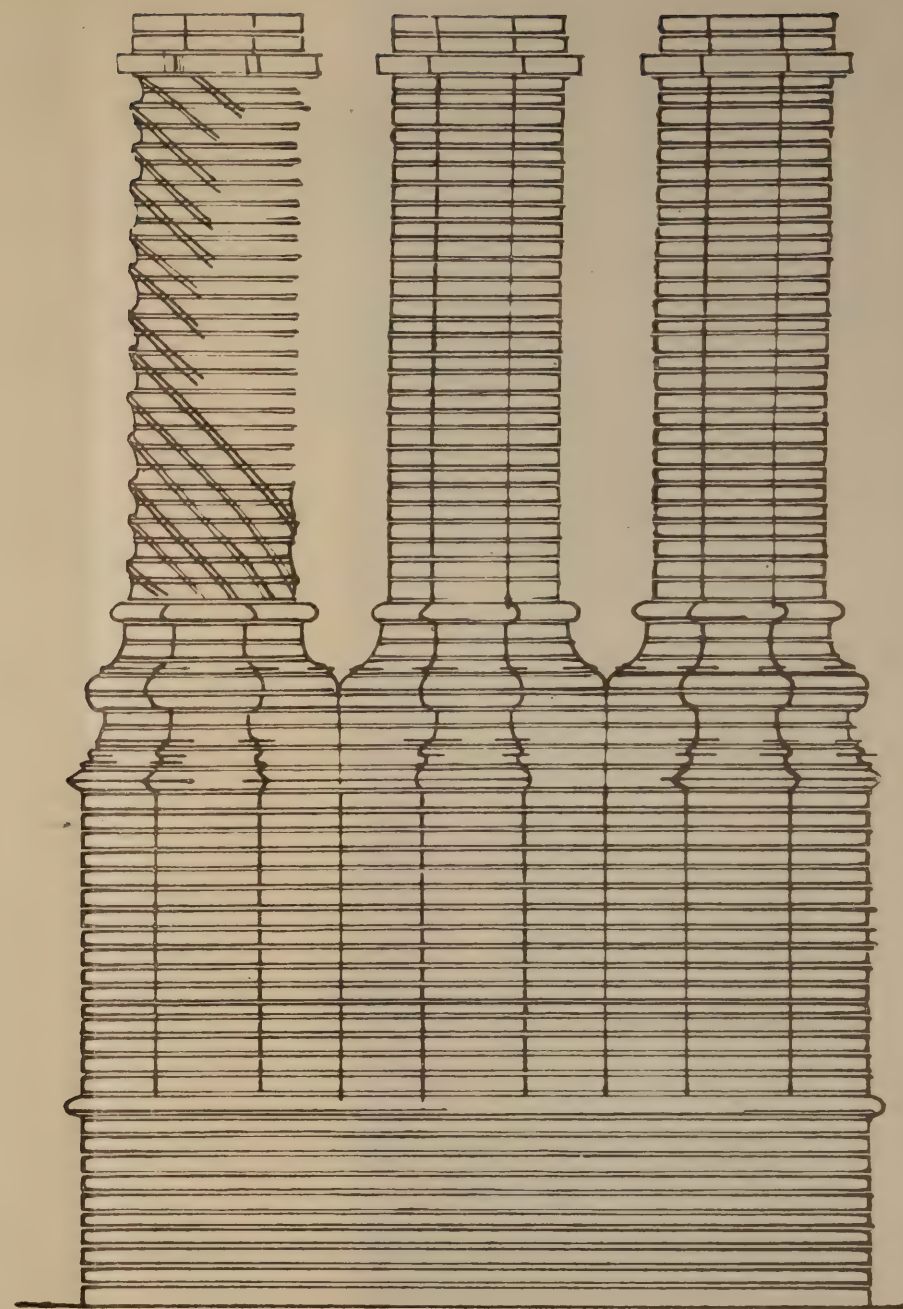
PLAN OF FLUE



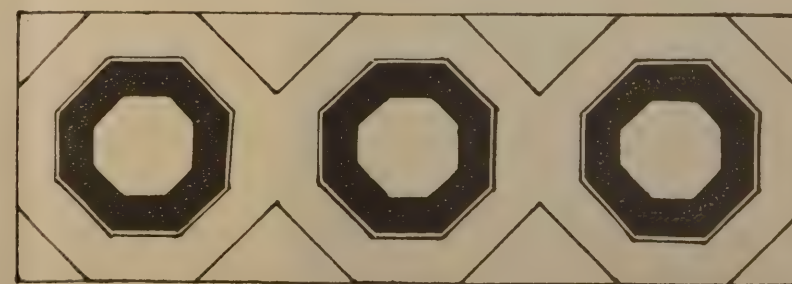
SECTION THROUGH ROOF OF TOWER
SHOWING CHIMNEYS ON EACH GABLE



SCALE OF FEET



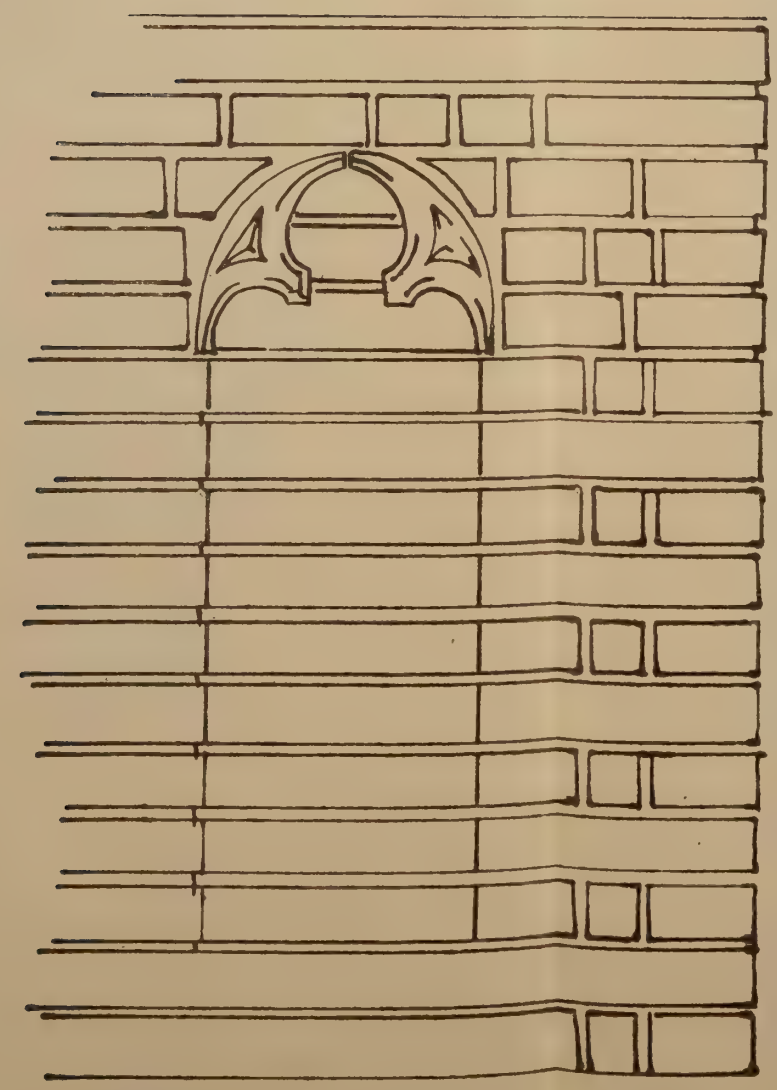
ELEVATION LARGE STACK ON TOWER.



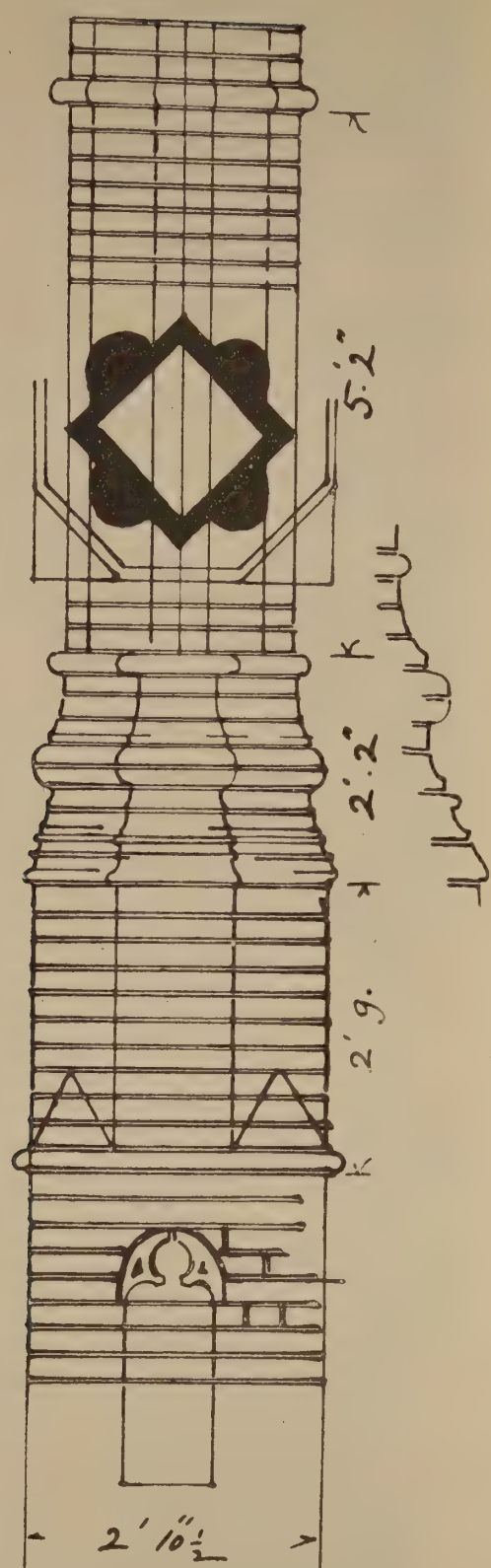
PLAN OF STACK.

Arthur J. Bolton
meas & del —

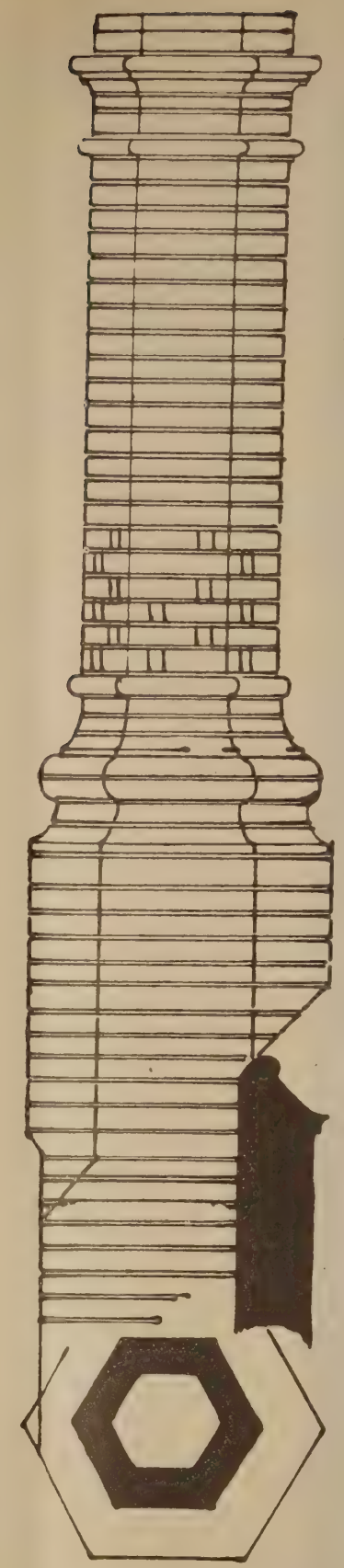
Chimney Stack in Brickwork
Old Examples from
Compton Wynyates
Warwickshire.



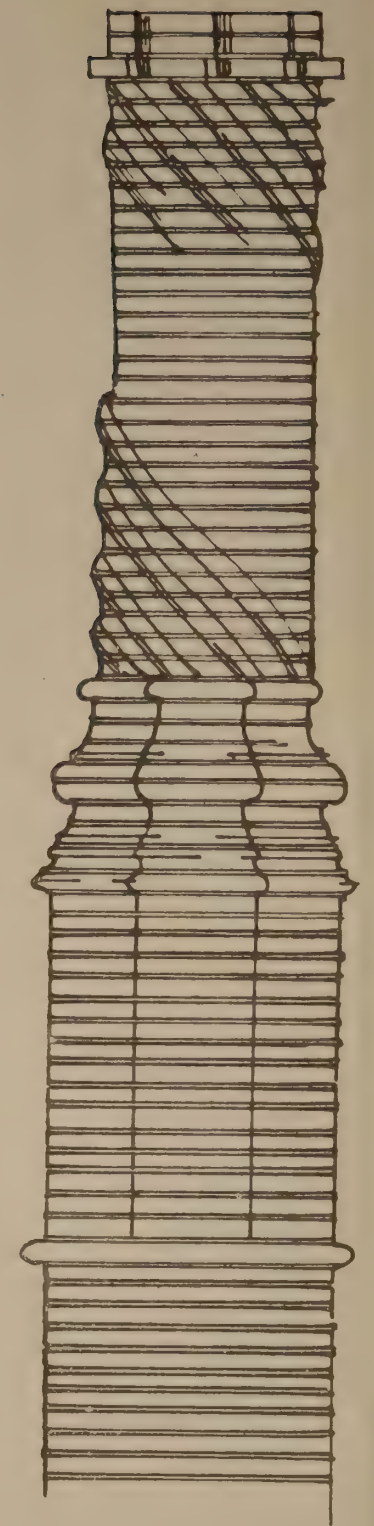
DETAIL OF PANEL AT BASE OF CHIMNEY.



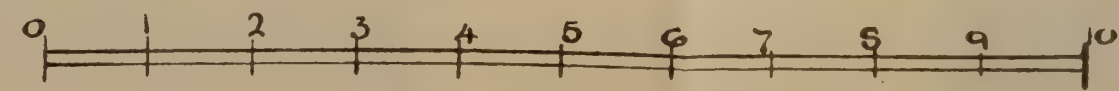
CHIMNEY ON SOUTH
ELEVATION flank wall
above Chapel



CHIMNEY ON SOUTH
ELEVATION. WEST SIDE
OF CHAPEL



END ELEVATION OF CHIMNEY
STACK & TOWER SOUTH
ELEVATION

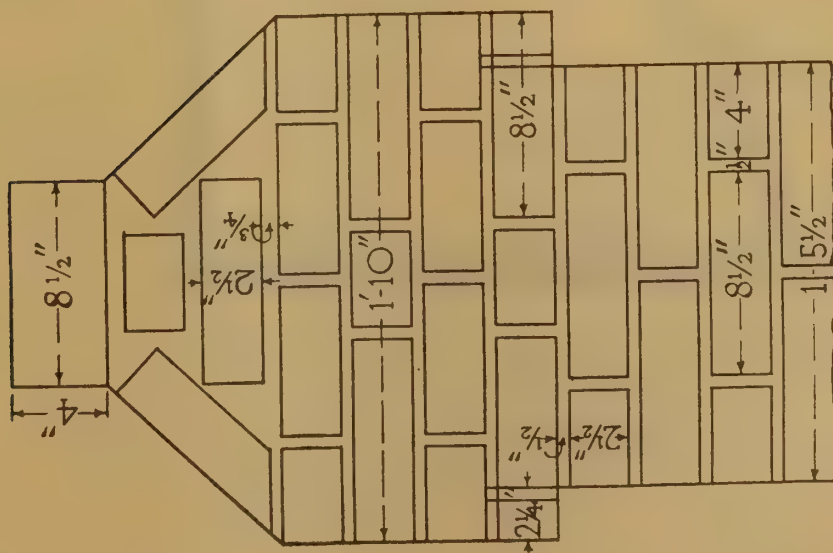


SCALE OF FEET

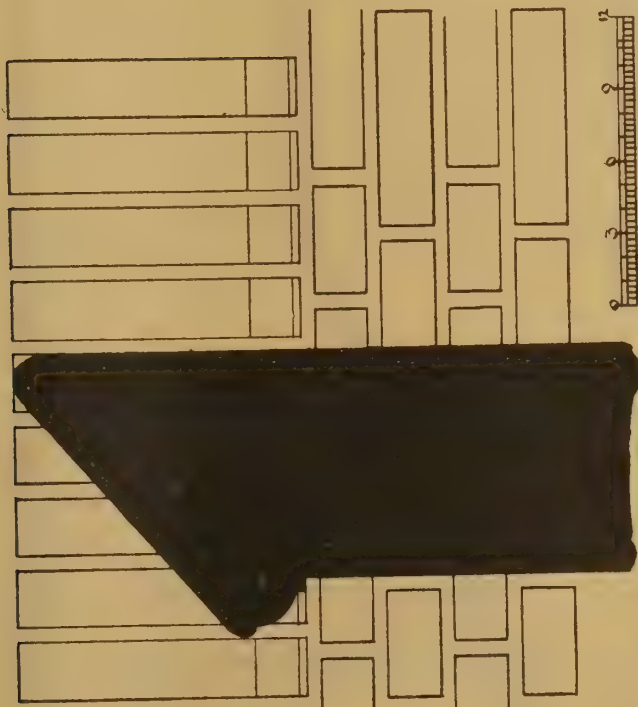


SCALE FOR DETAILS

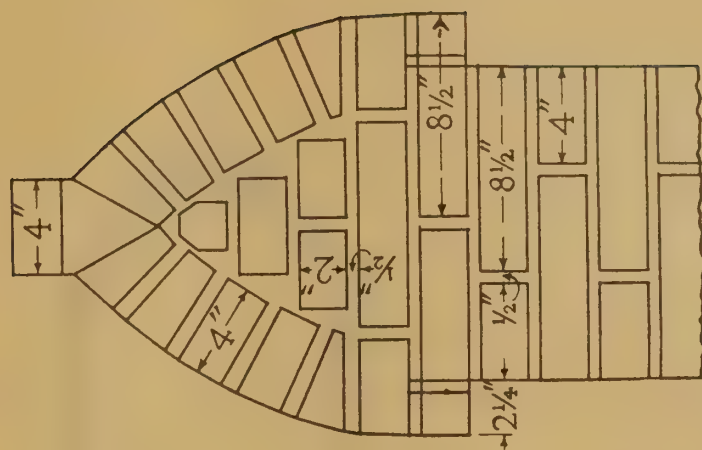
Arthur J. Bolton
meas et del.



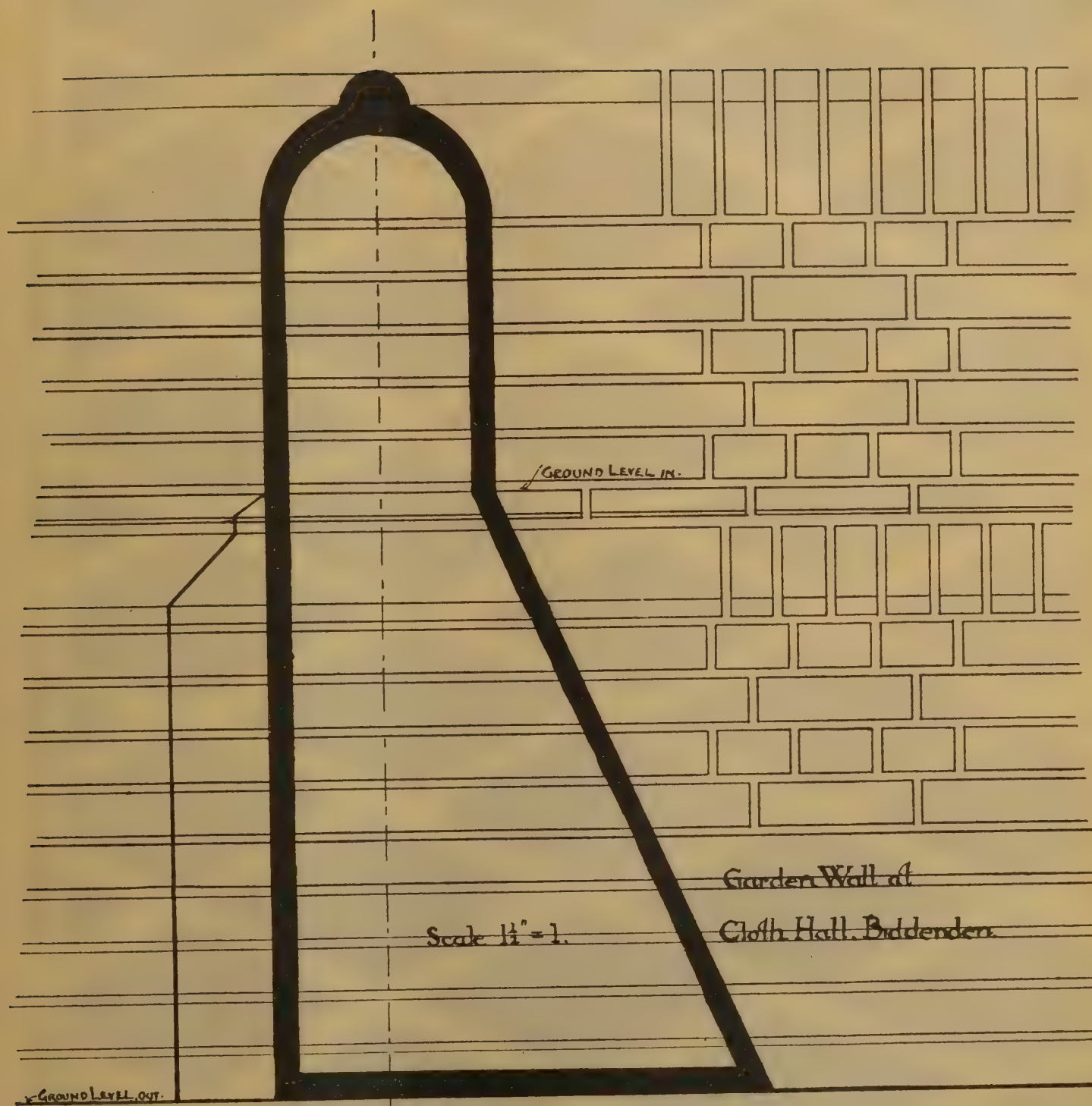
MORDEN HALL, SURREY
Section of wall coping



FINCH DEN, TENTERDEN, KENT
Garden wall coping

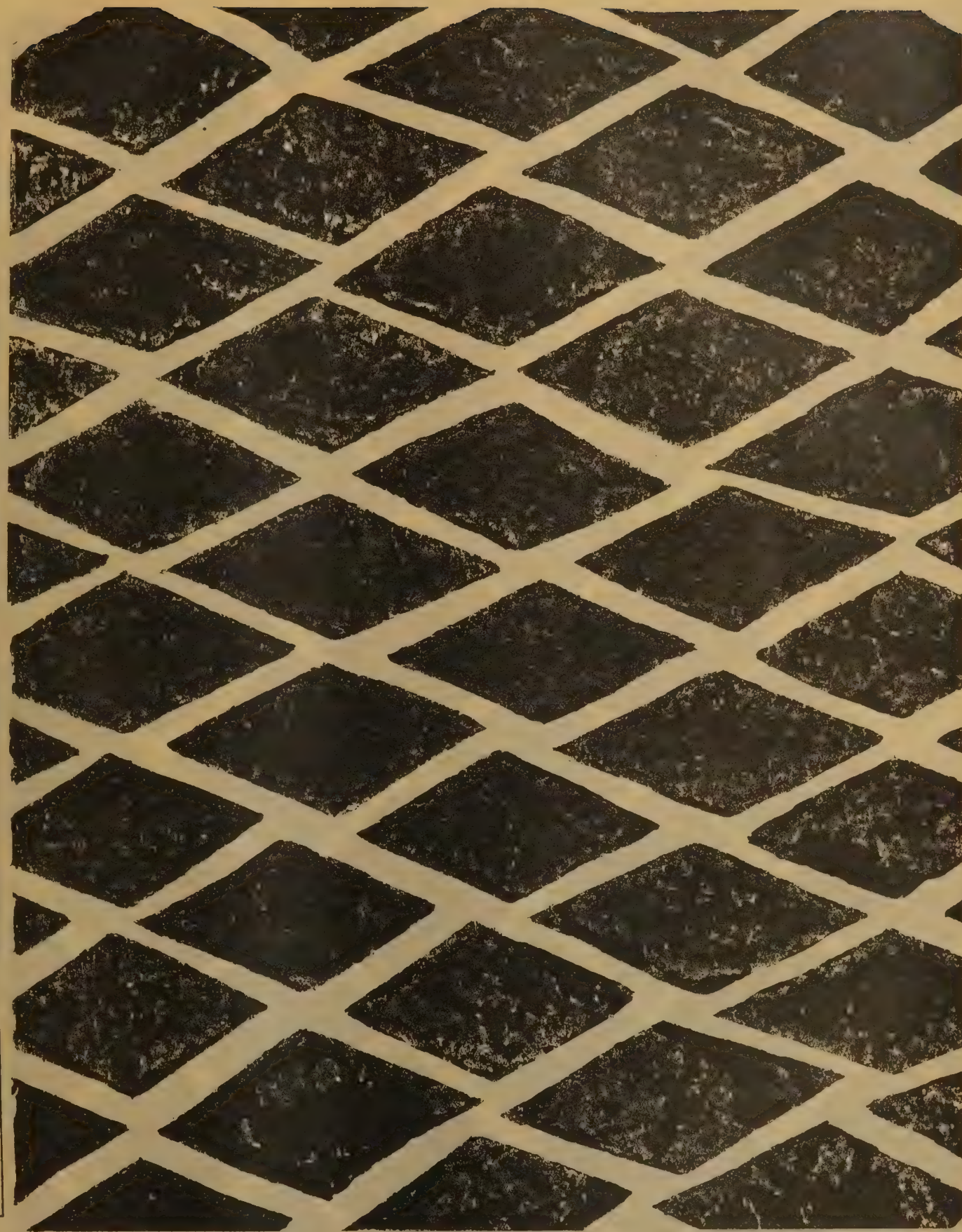


LONG MELFORD HALL,
SUFFOLK
Section of wall coping

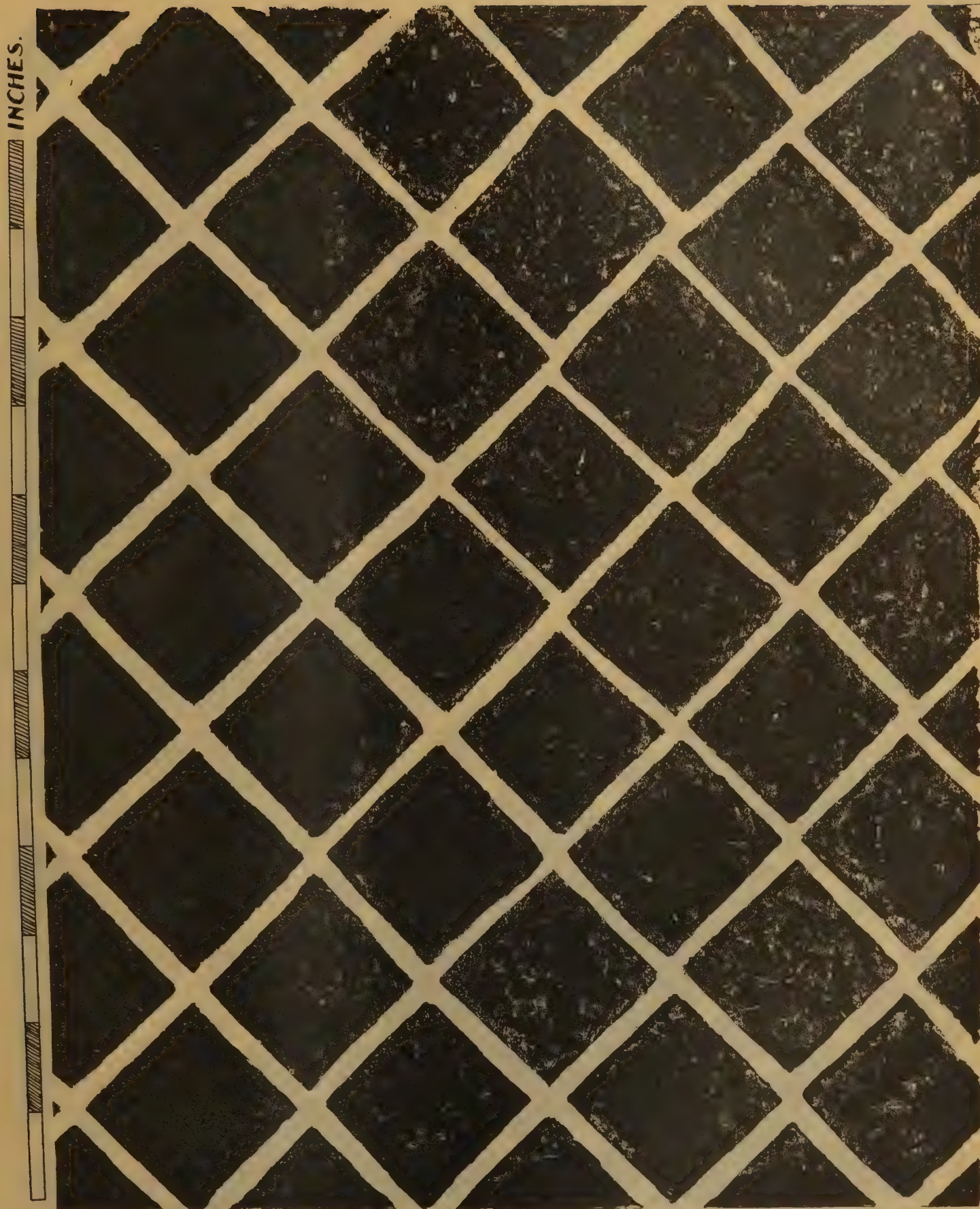


See wall having similar coping brick, p. 332

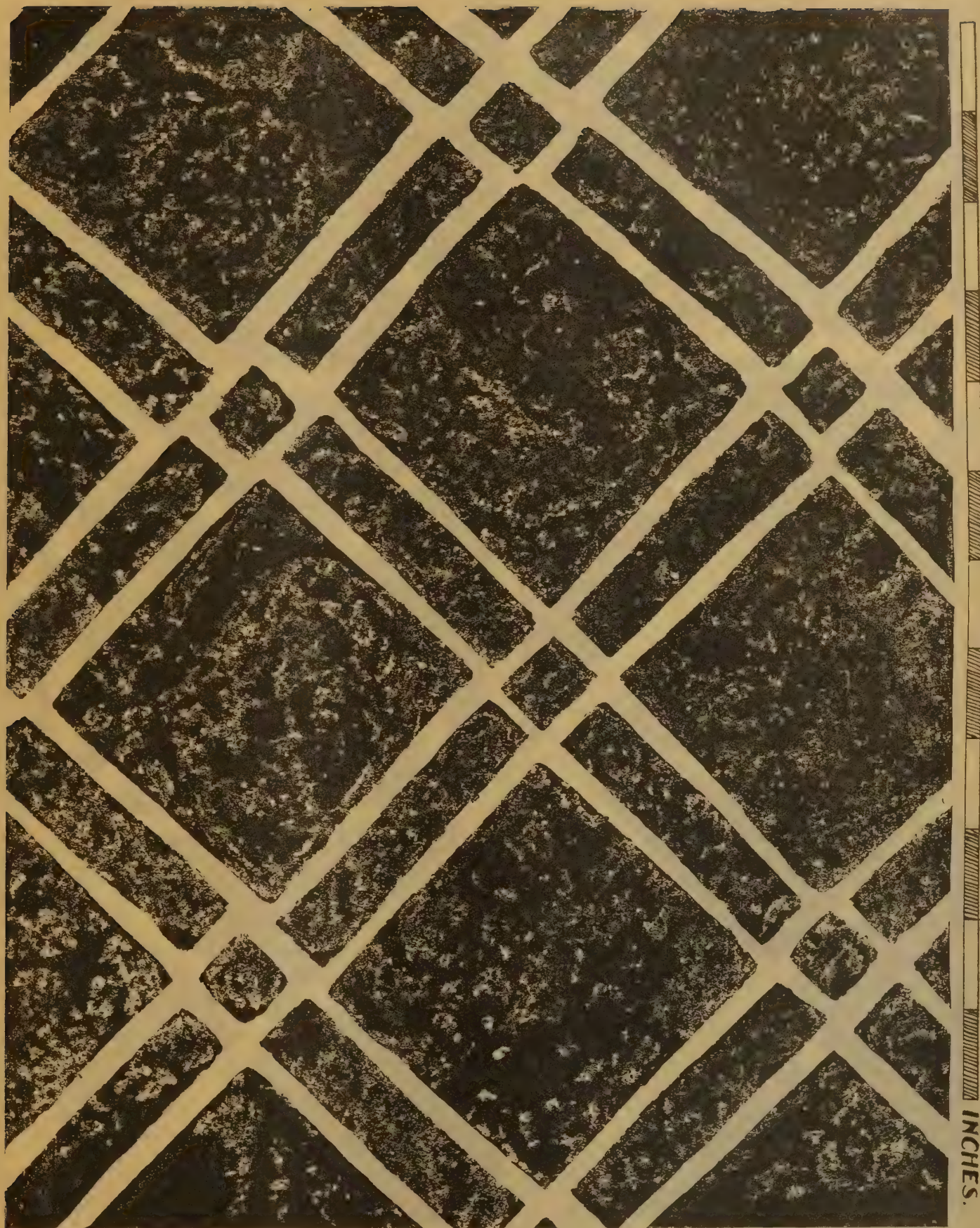
INCHES.



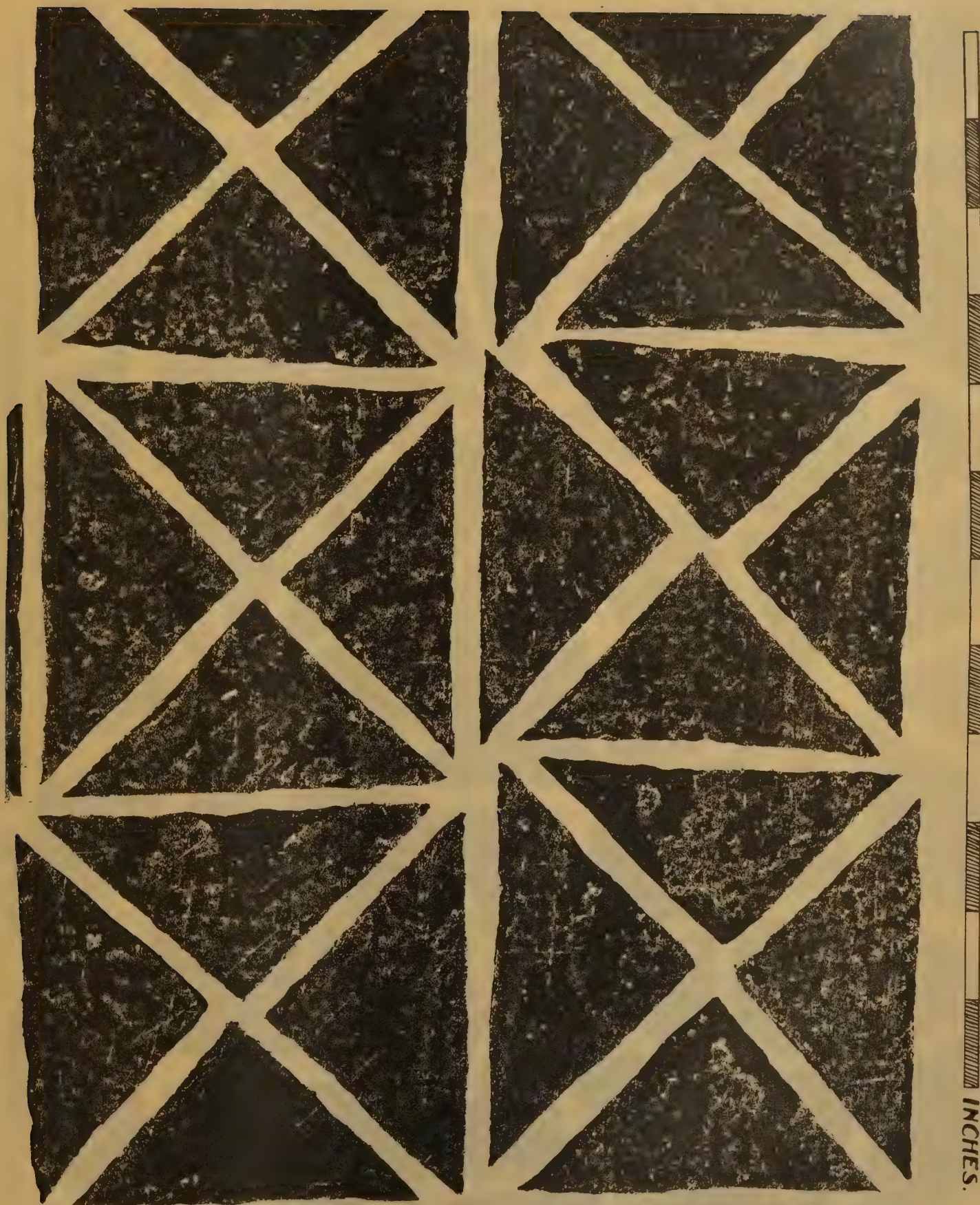
BRICK TESSERAE. ROCHESTER CATHEDRAL
Early 13th century



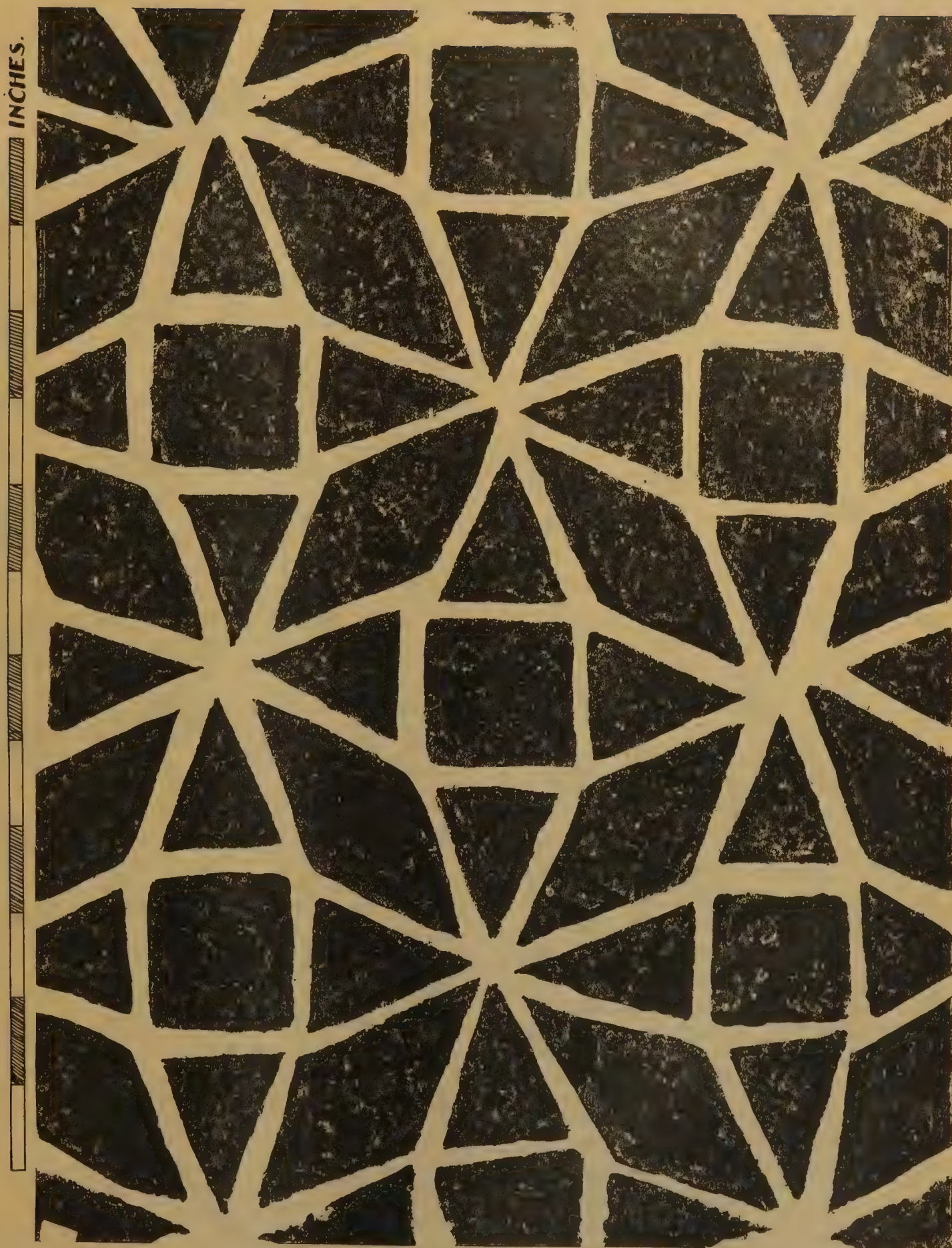
BRICK TESSERAE. ROCHESTER CATHEDRAL
Early 13th century



BRICK TESSERAE. ROCHESTER CATHEDRAL
Early 13th century



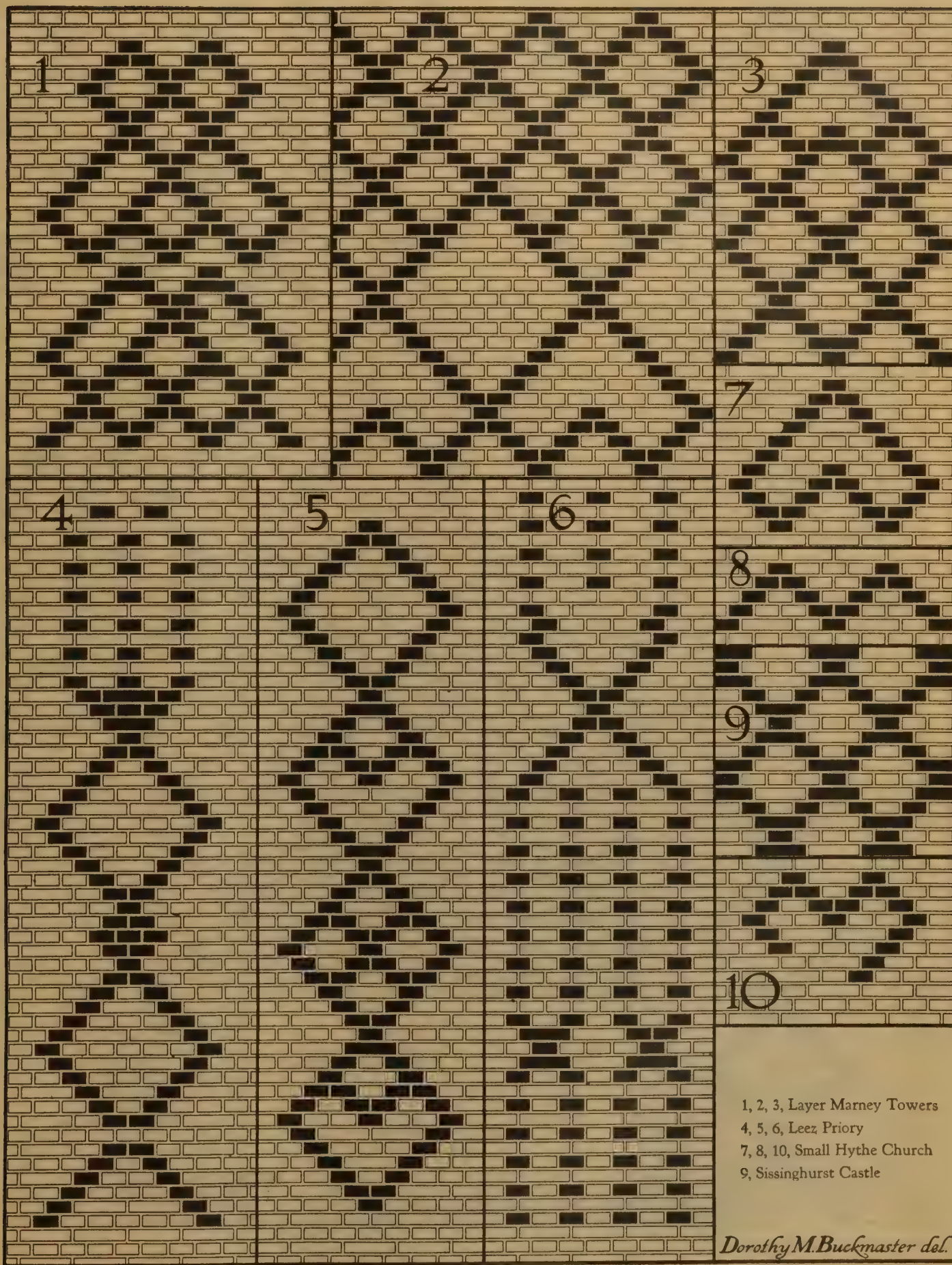
BRICK TESSERAE. ROCHESTER CATHEDRAL.
Early 13th century



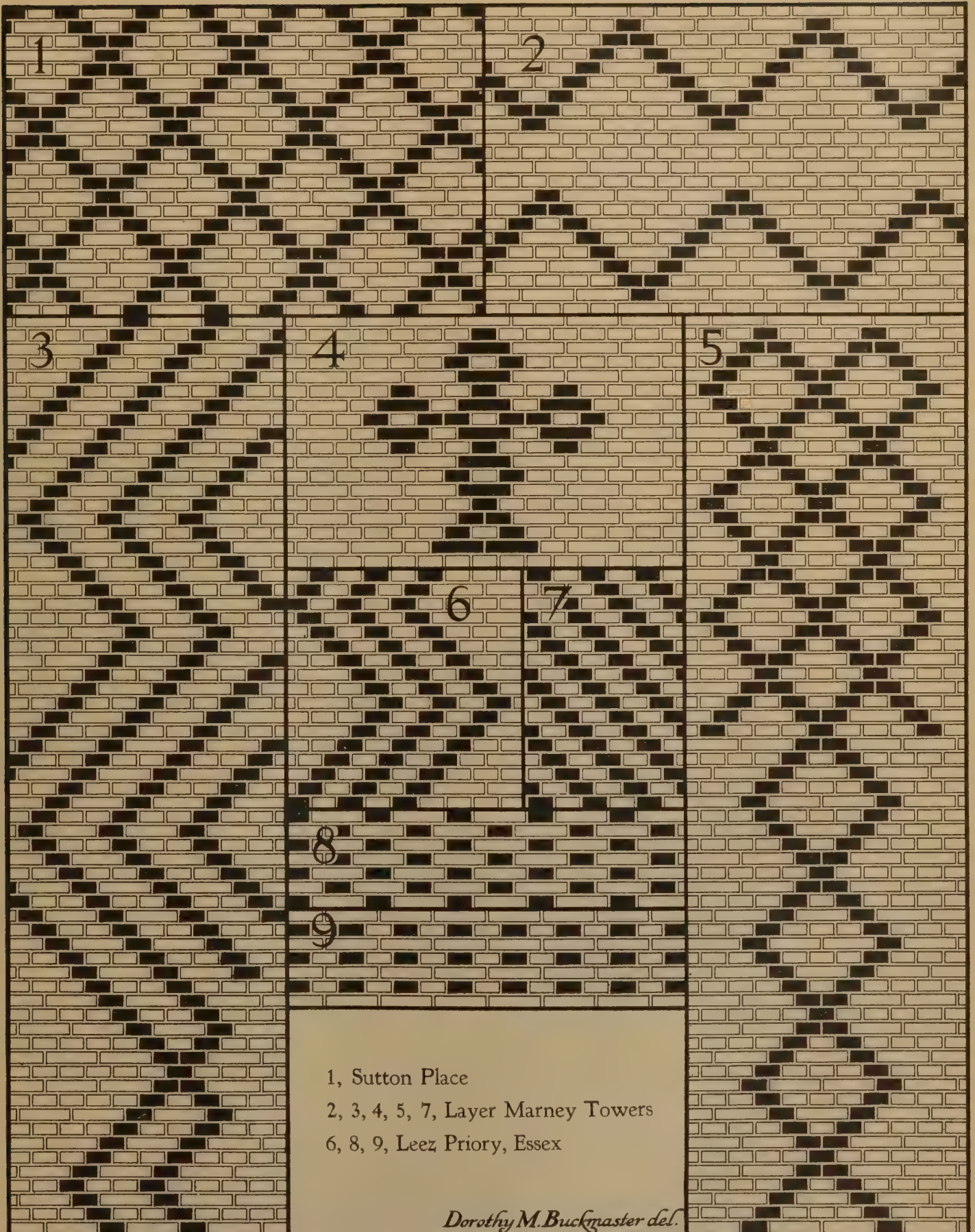
BRICK TESSERAE. ROCHESTER CATHEDRAL

Early 13th century

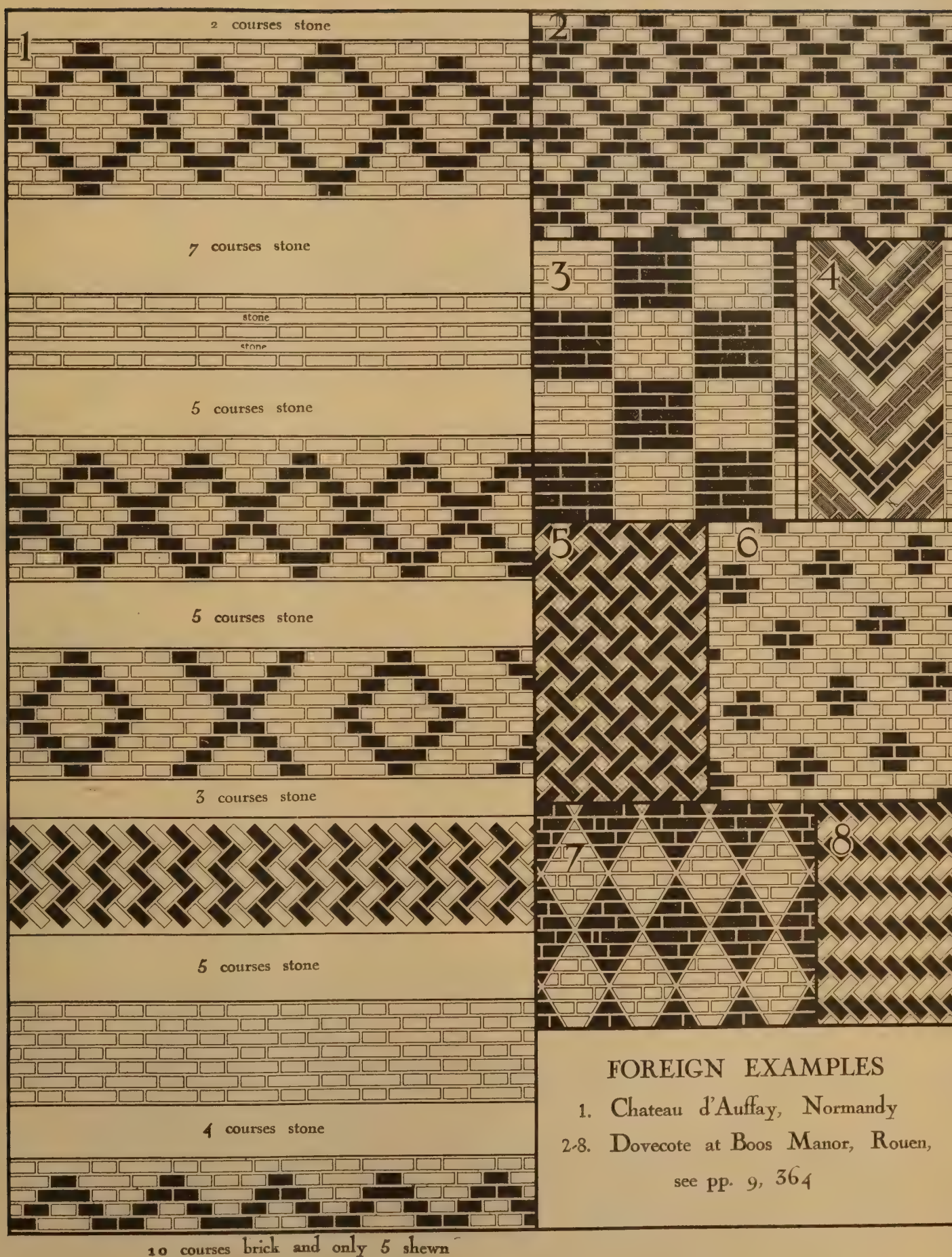
DIAPERS



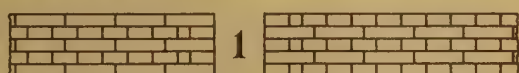
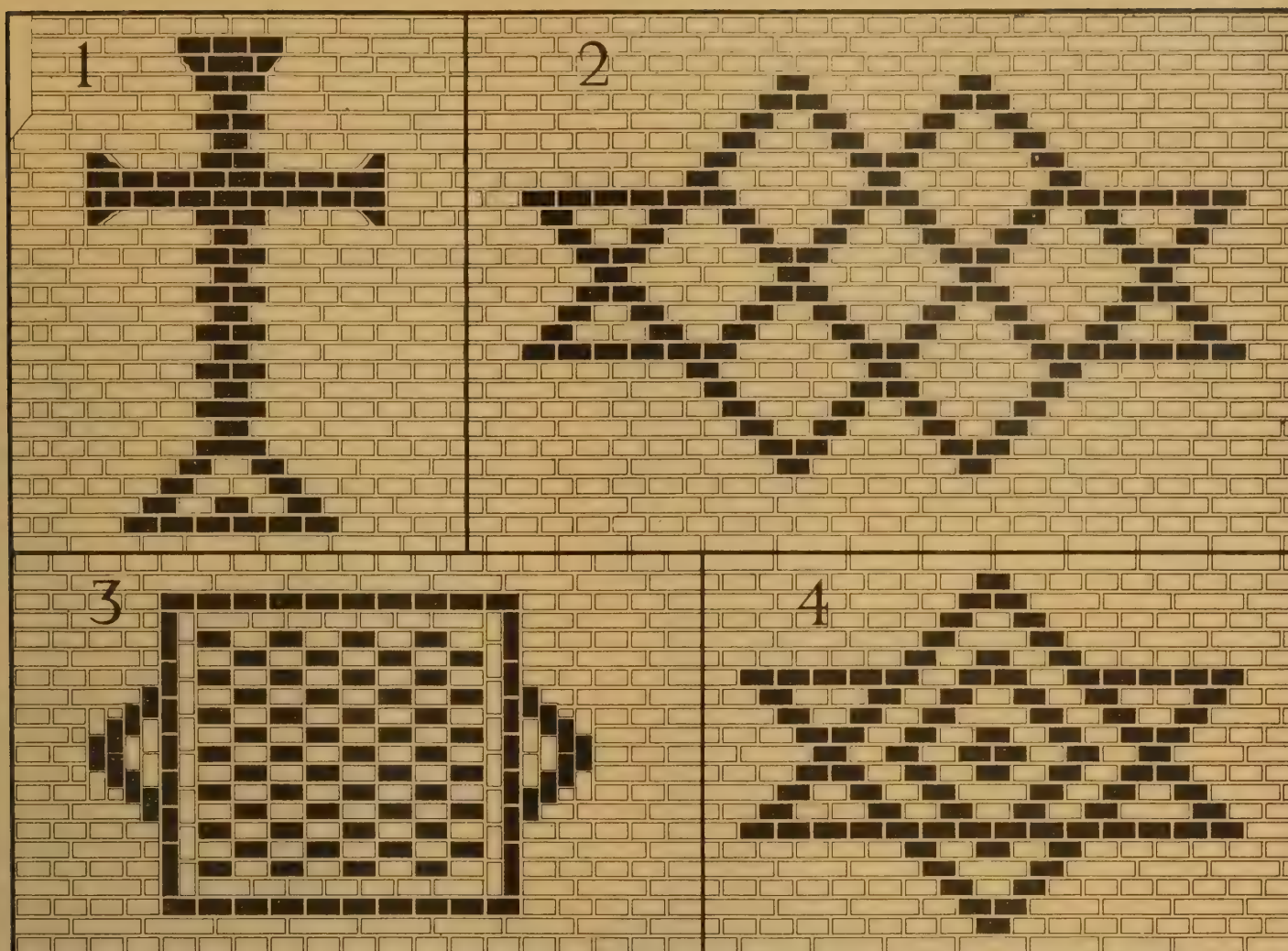
DIAPERS



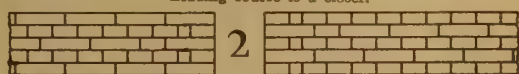
DIAPERS



DIAPERS & BONDS



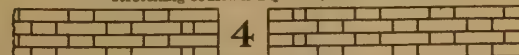
1 ENGLISH BOND.
Alternate courses of leaders and stretchers. The second brick of heading course is a closer.



2 ENGLISH CROSS BOND.
Stretchers breaking joint. The second brick of alternate stretching courses is a header.



3 DUTCH BOND.
Stretchers breaking joint. The first stretching course begins with a $\frac{1}{2}$, then a header brick, then stretchers. The first brick of second stretching course is a $\frac{1}{2}$ brick, then stretchers.



4 FLEMISH BOND.
Alternate stretchers and headers in the same course.

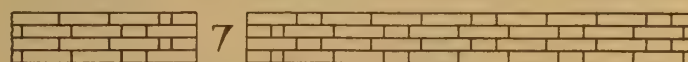


5 HEADING BOND.
All headers except a $\frac{1}{2}$ brick at quoin in alternate courses.



6 STRETCHING BOND.
All stretchers, except that alternate courses have a header at quoin.

1. EAST HORNDON CHURCH, ESSEX.
2, 3 & 4. BISHOP'S PALACE, HATFIELD.



7 FLEMISH GARDEN WALL or SUSSEX BOND.
Three stretchers, then one header in every course.



8 ENGLISH GARDEN WALL BOND.
Three stretching courses to each heading course.



9 FACING BOND



10 YORKSHIRE or FLYING BOND.
(From Little Wenham Hall.)



11 Foreign Example—MONK BOND.
Two stretchers then one header in the same course.

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